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Published Monthly at Indianapolis, Indiana

Vol. IV, No. 8 JULY, 1928 $1.00 a Year

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Bulletin No. 11 — Hilo Lacquer

See Page 99 Baked Finishing Section

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Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

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With the Editor

NEW DESIGNS in furniture and automobiles, as released and exhibited by manufacturers, emphasize the increasing importance of designs, color treatment and finish in products which are primarily produced for utility purposes. The newest creations will be successful in proportion to their sales appeal—that combination of features about each article or group of articles which will influence volume buying to satisfy both the initial needs and the replacement desires of the general public.

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When newly-designed articles move off the dealer's floor rapidly and in volume, they are successful—provided they can be made and sold profitably. The manufacturer's first problem is to incorporate a powerful sales appeal in his products and then organize his establishment to produce those products profitably, at a selling price that will not impede their sale in competition with other articles that come before the class of buyers to which he caters. To accomplish this the development of designs, color schemes and finishes must be placed on more of a deliberate precision basis, and every source of information that will contribute to this end should be employed to fullest extent.

O. H. Rohr

Managing Editor

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Wood Finishing Materials—

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Quick Drying
Durable

SMOOTH COAT
The Best
Flat Varnish

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LACQUER ENAMELS
A wide variety of Colors

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Samples and complete information on any finishing materials furnished on request.

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Every user of pyroxylin finishes will be interested in the following discussion of how the durability of wood lacquers is affected by the balance and proportion of its ingredients. It is a simple and definite discussion of a problem that has often been argued by technical men.

Durability—a question of balance

Director of Industrial Sales of E. I. du Pont de Nemours & Co., Inc., Parlin, N. J., discusses the question of durability of pyroxylin finishes

By L. P. Nemzek

THE question of durability in wood lacquers seems to be widely misunderstood. It is sometimes said that a straight pyroxylin lacquer containing no gum is the most durable. But it is also argued that the most durable lacquer is high in certain types of gums and low in pyroxylin. These contradictory statements obviously cannot both be correct.

As a matter of fact, durability depends largely upon a proper balance of the ingredients employed. There are three types of solids in lacquers—pyroxylin, gums and plasticizers. An over proportion of any one of these constituents lowers the durability of the lacquer. Then, too, there are a great number of different types of pyroxylin, gums and plasticizers and only by choosing the proper type of each ingredient, and blending the ingredients in the correct proportion, can the greatest durability be produced.

It should also be remembered that a lacquer cannot be made from the standpoint of durability alone. Consideration must also be given to working qualities. If an excess of certain plasticizers were added to ordinary wood lacquer, durability would be greatly improved but the finish would remain soft and tacky and would not rub satisfactorily.

Years of experience in formulating lacquers and innumerable tests in research laboratories have enabled the du Pont company to combine the most desirable ingredients in the exact proportions to give the greatest durability plus easy working qualities in Duco—a lacquer with the proper balance of solids. *Advertisement.*

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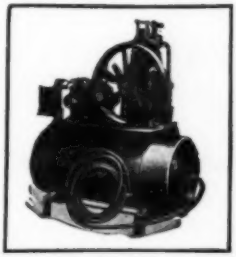

compressor, but of far greater importance is the fact that this accurately controlled lubrication greatly minimizes the clogging of filters and, therefore, keeps lubricating oil out of the paint or lacquer. Mechanically, it is designed and built to automotive standards of accuracy.

That is why the leading spray gun manufacturers use or recommend the Curtis Compressor for use with their equipment.

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Pneumatic Machinery Co. **74th Year** **U.S.A.**

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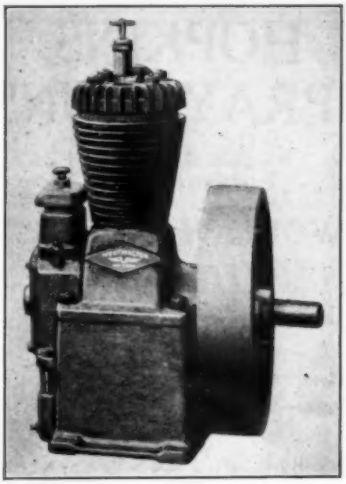

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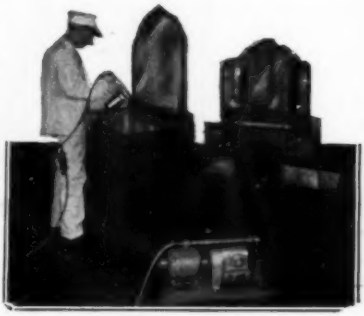

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¶ A smoother, more durable finish
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¶ Do not clog
¶ Reduce finishing costs

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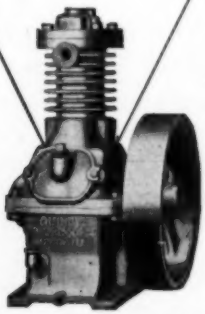

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3. Does not bleed in modern lacquers.

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We are using water—oil stain. (Check)
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Address.....

I. F.—July

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Paint and Varnish Makers Since 1849
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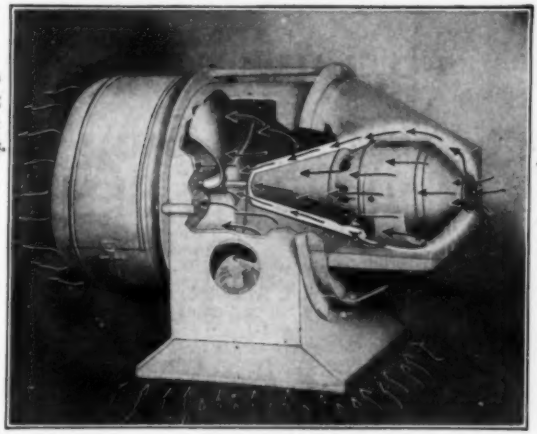
New York Pittsburgh Chicago
Boston Oakland
and local distributing points

Save the surface and you save all

Lucas
Krinkle Kraft

Send for Bulletin G 28 describing New Paasche VentilatingUnits.



Paasche leads again!

New fire-proof ventilating unit years ahead of the time

NOW - - you can ventilate your finishing room in complete safety. Combustible vapors present no fire hazard in the new Paasche fire-proof ventilating units. Most ideal for the finishing room. Built compactly -- Can be mounted in any position desired. Made in 4 sizes. The motor is totally enclosed and thoroughly cooled. Specially designed fan draws largest volume of air for power consumed, assuring maximum economy. These units surpass the present requirements of all authorities, and even anticipate the strictest fire hazard regulations.

Paasche Airfinishing Booths are made in any size to accommodate largest or smallest articles. Sectional construction permits conversion to different sizes by additional panels. They provide safe and healthy conditions for the operators.

Standardize on Paasche airfinishing equipment. It pays.

Fl-Grav

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Such instructions were issued by the manager of one of the largest body building shops in the world after he had received a satisfactory report from his efficiency expert on the

SPRACO

14-A Lacquer Gun

This manufacturer wrote us in part as follows: "We are so pleased with this gun that we ordered thirty to be put in use in our paint department. You have, of course, already received our order for this quantity of guns."

As soon as this initial order was put through and tried out, they standardized on SPRACO Guns and are buying additional ones for replacement of other makes.

Ask for Bulletin 103 and get full particulars on this gun.

SPRACO PAINTING EQUIPMENT COMPANY

60 High Street **Boston, Mass.**

Invite us to show you

Sun Flat Lacquer

We will display our goods at our expense, and give you practical advice. How best to use.

White No. 1 Lacquer

COLORLESS

Clear and transparent, looks like a coat of celluloid on work. Can be polished.

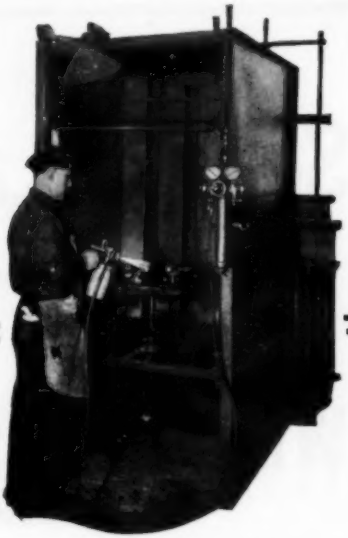
FINISHING ROOM FAVORITES

No. 115 Pale Rubbing

The reliable quality varnish that held its own so many years in the face of keen competition.

SUN VARNISH CO.

Louisville, Ky.



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An absolutely accurate control previously unknown is afforded by the new DeVilbiss Spray-Gun Type AV. In simplicity of design, wide range of adaptability, ease and economy of accomplishing a predetermined result this gun marks a definite advance in spray-finishing efficiency. It is characteristic of the very comprehensive line of DeVilbiss equipment for industrial finishing. Let DeVilbiss engineers with years of experience help you provide the most modern, advantageous and economical equipment for your spray-finishing problem. DeVilbiss service, quickly accessible everywhere, enables you to get the maximum efficiency out of your spray-finishing equipment at all times. Your request will promptly bring you the desired information.

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Chicago, St. Louis, San Francisco, Windsor, Ont.

Direct Factory Representatives in all other Territories

"I am not a pessimist by any means but naturally am interested in getting merchandise as low as possible, and for the life of me I cannot understand the present conditions.

"I have always felt that, under most conditions, it is not possible to get a dollar's worth of value for 75 cents, and when we get into cheap materials we had better watch our step.

"We are using INDUSTRIAL FINISHING *as our reference library and one of the best parts of all is the answers and questions, because of the concrete information given."—*

What Price Lacquer Goes

Production superintendent of woodworking factory cites some of his experiences in selecting, purchasing and testing lacquers and tells what the average user of industrial finishes is really interested in

By E. F. Werner

REPRESENTATIVES of 23 lacquer and finishing material companies call on us regularly. Most of them have advertisements in INDUSTRIAL FINISHING. They range in size from those that we know to be among the largest of their kind, to at least one concern whose lacquer is made in a small building that once was a garage.

If I do not know everything about lacquer it is my own fault. I know that I have been told everything about all the lacquers made. The information which is not told me by the representative himself is generously furnished by a competitor.

I do not mean by this that all competition is "dirty." Some of the men are as straightforward as any whom I have had the pleasure of dealing with. And all the information given about the other companies is not malignant. I believe that a salesman has a right to draw comparisons and show why, in his opinion, we ought to buy his material. Life itself is full of comparisons, and whenever we purchase anything, whether it is finishing material or a suit of clothes for ourselves, we judge values and make comparisons.

Useless Information

Ask me any question about lacquer and I will answer it for you. I know all the cotton contents of all the lacquers. On retarders, plasticisers and gums I am thoroughly posted. I always wondered where the old moving-picture films went to. That matter is perfectly clear now. It is usually told in this way: "Now, I do not claim that such and such a lacquer is made of old film waste, but if it is, then the price quoted is right in line."

The sum of all the fractions of nitrated cotton controlled by the various companies would amount to many times the total world's supply of such material—if the words of some salesmen are to be taken. As to their size, well next to the first seven they rank fourteenth, based on the popula-

tion east of the Mississippi or some place like that.

But what good is all this information to me? And the prices quoted? Formerly—that is six months ago—we paid $2.50 for a gloss wood lacquer and $2.75 for a satin-finish lacquer. The material apparently pleased our customers, because no unusual complaints were listed. Then the fun began. From every side the salesmen concentrated their attacks upon us. Samples were promised. We estimated that if all the promised samples were taken, no purchase of materials would be necessary for two years—more or less.

New Prices; New Conditions

Prices dropped almost overnight. What the material would not do was not worth doing. Almost all finishing room evils would vanish. The goods that were finished with that particular material would almost sell themselves. We also estimated that if we gave samples to all the men who requested working samples, so that they could quote us on similar material, we would not have any material left to work with.

Out of the chaos came some degree of order. Some were eliminated entirely. As one man became quite indignant when he was told that we had never heard of his company, although they were local manufacturers:

"What," he exclaimed, "you have never heard of us? Why we manufacture all the lacquer that the local dime store sells, and we feel that is one of the highest recommendations we can get!"

Some of the statements were ridiculous, and because the men apparently were not thoroughly drilled in their products, they automatically dropped out of the running so far as selling us was concerned.

The other men had products so similar that it was difficult to choose. For no particular reason, except possibly the sales approach, certain materials were picked out for tests and experiments; out of these few, standards were set and the kind of materials desired was determined. Possibly, we have not picked the right kind nor the right priced material, but we have done that which seemed best in the matter.

What do I care about most of the information given me? Our company cannot, with the exception of one sales argument, pass this information along to the persons who purchase our products. Our customers do not know, nor do they care to know about the various ingredients that go into the material we put on the goods. They want the article to look good, wear well and be priced within the reach of their purses.

Low Priced Lacquer

The other day we were offered a lacquer which could be used as a first coat for the price of—(censored but very low). The company making this offer is a small one but reliable, so far as we can learn. The material was tried and covered well, sanded smoothly and easily and built up very nicely for the other two coats. We are now giving it an aging test. This price is nearly 50 cents cheaper than any other similar quotation. How do they do it? The representative of one of the largest companies in the country, if not the largest, said that it was impossible for his company to meet this competition.

Naturally, being suspicious of this low price we have made an exceptionally close investigation

and have scrutinized the finished product more closely than ever before. So far the goods stand up fine and, if subsequent tests bear out this test, we will probably use this material on the cheaper lines first and then give it a trial on the better grade goods. Some of the other salesmen shake their heads dubiously and say that we are heading for ruin with this merchandise, but every indication so far shows results worth continuing.

This brings us back to the heading of this article, "What Price Lacquer?" What do we mean by price? Is it initial cost or ultimate cost? Doesn't the number of coats necessary to make a respectable coat enter into the question? How does the spreading value and cutting value enter into the discussion? How about the wearing ability of the material?

What We Want to Know

All the technical information may have some value, but this isn't what we are interested in. Naturally, the price must be known. How much reducer can it stand for spraying? How many square feet of surface can be covered with a gallon? How will the material stand up under extreme weather conditions? How will the various coats sand? What are the delivery conditions, and how long does it take to get the material into our plant?

That is the information we want. The initial price is not the main consideration, but naturally, if the cheaper article in price goes equally as far as the higher priced article and wears just as well, then we are interested in prices and will, under average conditions, give the business to those companies that realize the changing conditions of business and are ready to meet the consumer half way.

We do not care what the material is made of, so long as it answers our purposes, and naturally the cheaper, highly competitive articles—which are now our greatest sellers—must be finished with such materials as will give a passable finish and yet maintain the low cost.

Johnson McKim Johnson Co.

The Board of Directors of the Johnson McKim Johnson Co., manufacturer of finishing materials, Linden, N. J., announces the election of:

Mr. Walter A. McKim.....President
Mr. Philip E. Haebler.....Treasurer
Mr. William T. Haebler...Secretary

Mr. McKim, a graduate of North Dakota State College and the Massachusetts Institute of Technology, was formerly with the Research Division of the New Jersey Zinc Co. He will continue his activities as technical director of the Johnson McKim Johnson Co.

The E. M. Reeves Co., Moves

The E. M. Reeves Co., manufacturer of the Reeves Striping Pencil has moved from Campbell, Mo., to 202 Spanish St., Cape Girardeau, Mo. This move was made to give the company enlarged and better facilities for manufacturing and shipping.

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"The task of properly designing the whole system for the critical requirements of finishing lies with the user who would take advantage of profits available and who would enjoy immunity from numerous exasperating and perplexing annoyances."—

R. B. Prentice

Compressed Air for Spray Finishing - I

First installment of a two-part article which explains, in considerable detail, the actual conditions and various elements entering into practical compression, heating, cooling and straining of air to obtain a "commercially pure" product suitable for high grade spray finishing

By R. B. Prentice

COMPRESSED air for finishing is quite a different commodity than that required for most purposes wherein practices have become more or less standardized. It does not lie within the province of compressor manufacturers to guarantee compressed air suitable for finishing. The compressor is only one unit in a system composed of many units, all of which contribute certain characteristics to the ultimate product as it is delivered to the spray booth. The finest compressor in the world may be so connected up with other contraptions as to supply air of the worst kind for finishing.

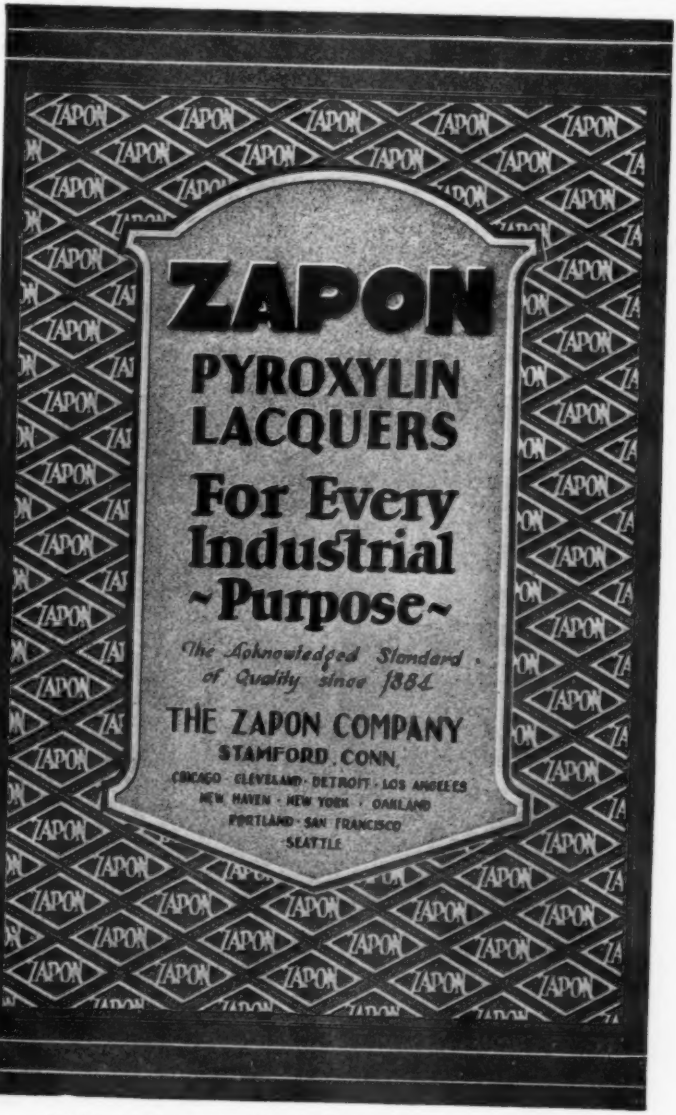
Dust; Water; Oil

The particular laws of nature in which we are interested in our effort to procure clean dry air are those concerning the varying appetite of air for moisture and oil vapor, and those concerning the ability of the air to hold dust in suspension, together with practical equipment for the elimination of these elements.

Air, as we breathe it, is more or less charged with dust and water vapor; it is the particular mischief of a poor air compressor to add oil to the mixture. The filtering out of this foreign matter involves the employment of two principles whose effects are fairly well established. One of these is a law of thermo-dynamics and the other is a law of simple mechanics. The first—thermo-dynamics—involves consideration of the effects of compression upon air, as manifested in the resulting temperature and consequent alteration of the appetite of air for water when in the compressed and heated state, and the converse of these conditions when the air is expanded and thereby cooled. The second—mechanics—has to do with the effects of centrifugal force and viscosity of the fluids in a compressed air system.

"Commercially Pure" Air

When water, oil vapor and dust are termed foreign matter, reference is made specifically to those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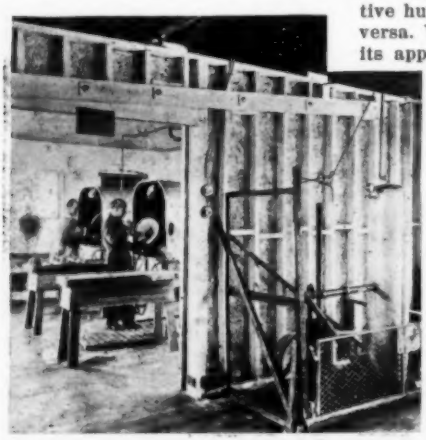
portions of these ingredients that might be deposited upon work in the spray booth. Were it possible to render the normal mixture stable, so that it would not be divided upon the work, the elimination of difficulties from this source would be quite as effective as by the actual trapping out thereof.

Thus, when satisfactory work may be done, the air is "commercially pure," and on this account it is neither practicable nor any advantage to carry the trapping-out process to any absolute standard of thoroughness. Furthermore, it is a very complicated and prohibitively expensive process to produce air really free of water.

When we say "dry air," we mean air in which is no free suspended water—not air totally devoid of all humidity. The same air may be "dry" at a high temperature, and "wet" at a lower temperature, and this without any alteration of the actual weight of the water content. Perhaps if the term "drying air" were used instead, it would be more descriptive, for moisture is quickly dried by dry air, but drying is very poor in wet air—or more properly, very humid air, or air close to the saturation point, or more exactly, when the relative humidity is nearly 100 percent.

The relation implied is the relation of the water actually contained in the air, at some certain temperature, to the ultimate capacity for water of that same air at that same temperature. If we are dealing with atmospheric air at atmospheric pressure, these factors will suffice for our notation. However, when air is compressed another factor is introduced that complicates our considerations somewhat.



Showing sprayers at work inside a spray room supplied with compressed air from compressor and tank at right—outside the spray room.

Temperature; Compression

When air is heated, its appetite for water is increased, or its relative humidity is lowered and vice versa. When air is compressed, its appetite for water is lowered by the pressure. But when air is compressed it also gets hot. Thus we have a combination of opposing tendencies at work, but fortunately the effect of heat in increasing the appetite of air for water (and oil vapors) is always greater (at least within a practical range) than the effect of pressure in decreasing the appetite for water.

The capacity of air for water is doubled with each rise in temperature of approximately 20 degrees, but its capacity for water is decreased by compression merely

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in proportion to the compression.

To illustrate this by a concrete example let us consider what happens when air is compressed. Air is drawn into the compressor at a temperature of 60-deg.—a pressure of one atmosphere, or 14.7-lbs. per square inch. Let us presume it is raining and the relative humidity is 100 percent. The air is then compressed to approximately 103-lbs. per square inch gauge pressure, or eight atmospheres. Its capacity for water is reduced to one eighth and if the temperature remained the same, seven eighths of the water content would be precipitated.

At the same time the temperature of the air thus compressed is raised 430-deg., so that its final temperature is about 490 deg. Now by the application of the rule above, the capacity of the compressed air for water is, by this rise in temperature, doubled about 20 times. The net result, of course, is that the appetite of the air for water is increased by compression.

Air compressor manufacturers strive to provide for much lower temperatures than that mentioned above, but despite every effort, temperatures of the air immediately after compression are seldom less than 300-deg; so the result in practice does not differ from the theoretical. It is, therefore, dependable practice to consider that *whenever air is expanded, water will be precipitated*, and when air is compressed water or oil will be absorbed if either is accessible. The greatest tendency to precipitate water or oil in the furniture-factory system is right at the spray-gun nozzle where the expansion is complete, unless some very good precautions are taken against this.

The appetite of air for water vapor is not affected by the oil vapor content, nor the appetite for oil vapor by the water content. No other vapor than that of the liquid itself seems to affect the appetite of the air for that liquid.

Extracting Water and Oil

Extraction of water and oil vapors from compressed air involves two distinct steps. So long as these vapors remain in the form of a vapor they are not susceptible of extraction; they must first be condensed into their respective liquid forms. Hence the same principles as operate to precipitate these liquids in the wrong place must be employed to precipitate them at a place in the system where they can be trapped out.

If a stream of compressed air be passed through a glass tube which has a series of bulbs much

Fig. 1—The passage of compressed air through a tube or pipe, which has enlarged sections or bulbs, will reveal interesting facts.

larger in diameter than the normal diameter of the tube, as shown in Fig. 1, water and oil will be precipitated in these bulbs. However, if the velocity of the air current through this tube is great enough, these particles of moisture will be conveyed from the larger into the smaller parts of the tube and there re-evaporated, then condensed again as it passes through the next bulb and again re-evaporated, and so on.

In this experiment, the air, as it flows through the tube of varying diameter, is alternately expanded and contracted. When the air is expanded the pressure is converted into velocity, and the velocity into pressure when

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Distributing plates are detachable in sections for quick cleaning,—away from the booth. Spaces, between plates, provide maximum exhaust uniformly distributed over the entire area.

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In order to meet every regulation of the National Board of Fire Underwriters and standard requirements of State Industrial Commissions, Binks engineers have developed the "Distributing Plate Type" Spray Booth.

Not only have requirements been met but greater operating economy has been developed. The time and labor formerly required in servicing a spray booth has been simplified. The efficiency of the worker is increased and his health is safeguarded to a greater extent than ever. There are eleven standard sizes; floor types and bench types.

These remarkable improvements have been accomplished at a cost that will enable manufacturers to install these better spray booths as a paying investment. Full details will be mailed without obligation. Write

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the air is recompressed upon entering the restricted part of the tube again.

Actual Air Conditions

As liquids are condensed out of compressed air in the form of a very fine mist or dew, these particles of liquid have, at the instant of their formation, the same velocity as the air current and would ordinarily be carried along with the air stream until they were either re-evaporated or thrown out when the air is discharged at the end of the system.

In the state of perfect evaporation, such vapors do not differ sufficiently in their physical characteristics from the air itself to permit of their apprehension and elimination from the system. But upon condensation, the fine particles of water and oil at once attain a relatively high specific gravity, or weight per unit of volume—a property that renders them susceptible of capture in this wise:

Principles of Separation

When the same force, as that applied by a stream of air, is directed against two objects free to move and of different weights or specific gravities, as for example two cubes of equal size—one of wood and one of iron—the lighter of the two objects, as the wood cube, will be accelerated more rapidly than the heavier one (the iron cube). If the motion of the air stream be circular, the two cubes will be moved into two widely separated positions. This action is represented in Fig. 2 wherein the wood block is represented by "a" and the iron block by "b."

Now if we substitute a still lighter object, air, for the wood block, and particles of water or oil for the iron block, this effect will be proportionately exaggerated.

In the oil and water separator, the compressed air in passage is propelled through tortuous passages composed of varying sized chambers and sharp turns or

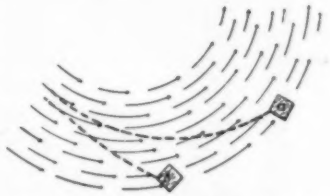

Fig. 2—Illustrating a principle involved in circular air currents, which may be taken advantage of to secure separation of excess oil and water from compressed air.

curves formed between the pebbles; the particles of condensed oil and water, being heavier than the air, are unable to negotiate the sharp turns and are consequently thrown against the pebbles, or bits of gravel, and accreted into drops and finally fine streams that drain into the lower part of the separator.

Thus on this basis, the elements of an oil and water separator are two: a series of varying-sized tubes to cause alternate expansions of the air in passage and the consequent condensation of vapors, and a series of sharply-curved passageways through which the condensed particles of oil, water and dirt cannot be successfully propelled without striking against the walls thereof.

(To be continued)

Metal lacquers may be sprayed, dipped, or brushed, and the solvent used in preparing the lacquer will depend on the method followed in its application.

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Decorative Finishing with Designs in Lace

Foreman finisher calls attention to the decorative possibilities of new figure and color designs for use on furniture and tells how these are obtained through the employment of lace stencils

By John Shearer

THIS ARTICLE treats on a style and design of finish that, I believe, is going to be all the rage in the very near future, where lacquer finishes are used. It is a style that can be worked out in many beautiful and appropriate designs.

The decorative finish can be applied to the tops of console and end tables, or on the tops and sides of magazine stands and baskets; it can even be worked out in a becoming design for milady's dressing table, vanity table, or for the top of a night stand.

Preliminary Coats of Finish

To begin with, the surface to receive the design need not be stained. Sand the surface and spray on a coat of shellac; then sand lightly when dry. Now fill with a natural filler, following this with a wash coat of clear lacquer; sand lightly and spray on a ground coat of black lacquer. Sand this well, being careful not to sand through, then spray on a coat—a double header—of jet or super-jet black, and sand well. A high luster can be obtained in the black by adding one quart of clear lacquer to one gallon of black.

Now comes the most interesting part of the whole scheme of this type of finish—the selection of the proper design.

The Design in Lace

The design is in lace and can be a rose, fern, flower spray, cupid design or any one of a thousand different lace designs. Cut the lace to be used in one piece large enough to cover the surface to be finished. Stretch it tightly over the surface, being careful not to draw it in such a way as to distort the design. Be sure to keep the lace tight to the surface.

Now spray on a coat of silver lacquer, or mix a little blue with the silver to give a polychrome effect. Now lift the lace straight off the surface and you will find the lace design will be in the black background, with the silver or polychrome as a foreground.

This finished surface can be oil sanded (when dry) and polished with surprisingly delightful results.

Variety in Design and Color

This is a type of finish that can be worked out in a number of color schemes, keeping in mind always that the body of the article can be finished in the usual way in mahogany, walnut, or in any of the popular finishes.

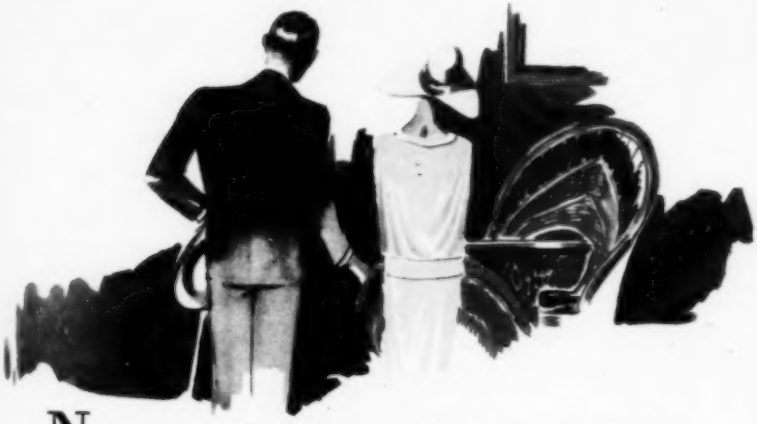
In the color scheme, keep in mind the fact that the majority of reds and pinks cannot be used for a background because of their tendency to bleed through. I have tried both on carnation and

THE PARADE OF COLOR

THE BOARDWALK

IT IS no mystery when people at the seashore and lakes spend many of their afternoons promenading along the boardwalks or wandering about the beaches, their eyes following the gaily-clad bathers and brightly-dressed strollers. Neither is it difficult to understand why they surround themselves with colorful furniture, draperies and wall coverings. . . . These people exhibit a very human and natural

reaction to an appeal that is as new today as it was when the first man roamed the earth—the appeal of color. . . . A knowledge and understanding of this trait influenced a few pioneering manufacturers to abandon stains and varnishes, to a limited extent, for lacquer and its distinctive colors and finishes. The result is history. Today, lacquered furniture holds one of the leading positions in the house-furnishing industry. . . . To manufacturers who desire to gain and hold their share of this profitable market, Arcozon offers not only a wide range of rich, glowing colors, but also a finish that provides many outstanding advantages of application. . . . No more eloquent comment on this product can be presented than the evidence that more and more manufacturers are adopting Arcozon as a standard finishing method. May we have a few minutes of your time in the near future to prove why?



NEVER before has there been such vital interest in rich, glowing colors ingeniously applied to emphasize the design of various products. No longer do people respond as readily to neutral monotones. No longer is attention concentrated upon conservative color harmonies. . . . Rather, there is an increasing preference for colors that are unusual, distinctive, expressive. . . . Keeping pace with varying tastes, The Arco Company devotes the major portion of its time to the development of hues and shades in Arcozon lacquers, new colors that appeal strongly to the imaginations of buying peoples.

THE ARCO COMPANY, CLEVELAND, OHIO

Paints Varnishes Enamels Lacquers

ARCOZON

THE ARCO PYROXYLIN LACQUER SYSTEM

rose design with disastrous results. Try this new decorative finish on an end table, or on the top of a console table to begin with, then on other articles as you become more proficient.

Methods of Operation

The way I use the lace is to draw it loosely over a wooden frame made of 1x1-in. material, the frame being of a size large enough to drop down over the surface I want to lacquer. I let the weight of the frame stretch the lace. This method of using the lace will prevent any possibility of distorting the design in the lace.

In regard to cleaning the lace after each spray operation, it can be cleaned in any good grade of lacquer reducer. I have a flat pan 12-ft. long, 4-ft. wide by 3-in. deep in which I lay my lace frame as soon as I take it off the surface I have just sprayed. This pan contains reducer deep enough to cover the framed lace. I let it soak for a few minutes then I slush it up and down a few times and hang it on the wall to dry.

Lacquer Finishing Wood Articles By Tumbling

Tumbling finishes have been used for many years, but these materials have been made mostly on a spirit base and are not comparable in appearance or durability with a lacquer finish.

Many finishers say it is impossible to obtain a good lacquer finish by tumbling and, up to a very short time ago, this was true. It is now possible to tumble any size or shape of part, within certain size limitations, in a clear or colored lacquer finish and get results that are in every way as good looking and as durable as those finished by spraying or dipping. This development is especially important since parts may be lacquer tumbled at about half the cost of spraying or dipping.

Of course, the use of lacquers for this purpose is practically new and good tumbling lacquers, as yet, are put out by only a few manufacturers. It is very important that the material be right, but the results depend also to a large degree upon the method of tumbling employed.

A few very alert finishers are turning out exceptionally beautiful work by this process. It will probably be found that in these cases the foreman finisher is in touch with the latest developments, and works closely with the manufacturer in developing the right materials for the type of apparatus used.

Advertisers in this magazine supply tumbling lacquers and are prepared to demonstrate their proper use.—W. W. Bennett.

Lacquers are now obtainable which give a satisfactory durability on wood surfaces.

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Designs and Finishes in Bedroom Furniture

Consulting designer reviews finishes on period styles of bedroom furniture and calls attention to the present trend toward lighter-toned finishes to reveal wood grain, and the use of figured veneers as a decorative feature to replace high-lighting

By Leo A. Jiranek

IN BEDROOM furniture, more than in any other, there is a better chance for ideas of color to be brought into the finish. There are usually enough bedrooms in a home, so that different ideas may be carried out in each; one may be a painted suite with striping of a contrasting color or hand-painted flowers. Light and fancy woods may be used more in a bedroom than in any other room.

The larger cities, such as New York, Chicago, St. Louis etc., demand a glossy highly-polished finish on their bed-room furniture, while the smaller places and the Middle West seem to prefer a more subdued and conservative finish.

Period Color Treatment

There is such a variation in bedroom furniture that much can be said about the treatment given to its finish. If a suite is a reproduction, special care must be taken to obtain the exact finish of that period from which the furniture has been copied.

Color enters into the finishing of an article to a great extent, as well as the treatment given after the wood has been stained. If the piece is from the Renaissance period, colors, such as gold, greens, and reds enter into the finish. In the Georgian period, we find a rich, dark color for the most part on mahogany, and in some periods a natural finish was used.

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Stains

Citron Yellow
Rosewood Red
Hazel Brown
Silver Gray
Tangerine Orange
Jet Black Ebony
Golden Amber

Adams & Elting Co.

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Taking for an example one of the common types of medium priced furniture, I will discuss its finish and methods of obtaining this finish.

The first thing to consider is the wood used in the construction of the suite. Walnut is one of the most common woods in use, and the walnut face veneer may be rotary cut, straight-grained, butt or crotch. The case fronts, head and foot boards may be of stripe walnut veneer placed in diamond-match formation.

Revealing More Wood Grain

We know that dark, heavy stains are giving way to the lighter shades, thus showing off the grain of the wood. It is a matter of choice as to how it is best to obtain this light color. Some concerns prefer the use of water stains to avoid fading; others want an oil stain, to cut down the cost of production by leaving out one sanding step; some use a combination stain and filler, which usually works out very well if the right kind of material is used.

The posts on most of this furniture are of gum and in staining, this cheaper wood must be matched to the walnut color of the rest of the suite. The carvings, if they are used, must be well high-lighted to keep away from the flat appearance that will undoubtedly result if they are stained the same all over. One method of arriving at a good high-lighting effect is to apply a coat of orange shellac to all the carvings, mouldings and turnings, that must be high-lighted. This prevents the stain from taking, and then the treated parts can be toned up with the spray gun and shading stain later, the high places being rubbed with steel wool afterwards.

Orange shellac is more successful to use in these places than white shellac, as it gives a warmer color to the high-lighted spots. Now, the shading and high-lighting just described, and the toning up of gum parts on the furniture is about all that is done, as the heavy shading and antiquing which was formerly so popular has become passe.

Attractive Veneer Decoration

In place of shading, the color contrasts are obtained by means of different veneers, such as overlays and inlays of thuya burl, birds-eye maple, madrone, carpathian elm and various other fancy and imported woods. Sometimes a routed line will make a border or give the effect of an overlay on a drawer front, thus giving the opportunity of using the combination of a light and a dark stain on the same wood, this giving the appearance of two different woods.

A striking effect may be obtained by putting black or some other color in the flutes of the posts and standards of a piece of furniture. This may add distinction to the furniture and also set off the wood by the contrast.

Marqueteries adds a pretty effect and a dash of color to a suite, as many colorful woods are used to make up the design.

Either lacquer or varnish may be employed in the finishing of the suite and, if desired, a nice gloss luster may be obtained with either finish.

Bulletin of Spray Equipment

The Plummer Spray Equipment Corp., Napoleon, Ohio, is distributing a new 8-page bulletin (size 8½x11-in.) the pages of which are devoted to illustrating and describing a complete line of equipment for spray finishing.

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Modern Automobile Lacquers--II

Much information in regard to methods of applying lacquer finishes, touching-up, mist coating, polishing and buffing is revealed in this final installment of a Du Pont chemist's paper presented at the annual meeting of S. A. E.

By Dr. G. C. Given

SINCE GLOSS is a desirable feature in a lacquer finish, and since a high gloss may be produced by using a low ratio of pigment, there has been a great temptation to produce the high sheen so desired by the lacquer user by following the line of least resistance, that is, by cutting down the pigment ratio to a point where durability is impaired. At present, the only safe method to produce gloss is by careful control in the manufacture of pigment and by the subsequent thorough and complete grinding of the pigment into a proper vehicle.

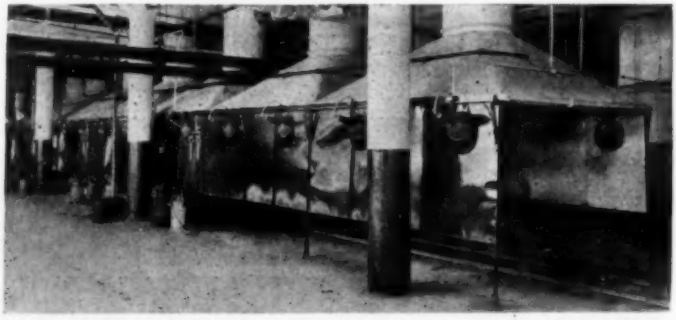
A lacquer made with pigments containing coarse, unevenly sized particles will not only be flat, but cannot even be polished to a high gloss. It may be mentioned here that the gloss of durable lacquers is higher than in the past. The increase in gloss has been gradual, but a comparison between lacquers of three years ago and those of the present day shows a great improvement.

Working Properties

Second only to durability, the finishing engineer is interested in the working properties of a lacquer. Working properties in which he is chiefly interested are as follows: Number of coats required, time of drying between coats, smoothness of final finish (absence of orange peel), ease of sanding, ease of polishing, "pull outs," ease of repairing (touch up), bridging and masking.

Number of Coats

The number of coats of lacquer will vary over rather wide limits because of different conditions of



A tunnel-type spray booth used on conveyor line where automobile bodies are spray painted at Fisher body plant in Detroit, Mich. Photograph, courtesy of the R. C. Mahon Co., Detroit

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air-pressure, different spray guns, different degrees of hiding power, etc. It has been discovered that a durable lacquer film only .0015-in. in thickness is sufficient for complete protection. Frequently it is necessary to put on a thickness greater than this because of the low hiding power of the lighter colors.

Two good average spray coats will give a film thickness of the necessary .0015-in., but only in the case of a dark colored lacquer will this be sufficient to hide the undercoats completely. In the case of some of the light cream colors four or five coats appear to be necessary.

Since it has been carefully determined that a minimum of .0015-in. in thickness is required to give the necessary durability, care should be taken that at least that much be left on the work. In some cases, colored undercoats of poor durability have been used in attempt to save lacquer. These undercoats are frequently of so nearly the same shade as the final finish that thin spots remain undiscovered and failures occur at these points.

If the somewhat questionable but universal use of ground-coats is to be continued, it is desirable to have them differ considerably in color from the final finish.

The thickness of coating which can be applied with one spray coat is dependent on the concentration of the lacquer at spraying viscosity. This, in turn, is dependent on the character of the pyroxylin. There seems to be no present prospect of increasing the concentration of the lacquers as sprayed, if the present standards of durability are to be maintained. If the viscosity-concentration relationship be much lower than that now used, the lacquer loses many of its desirable qualities.

Drying Time Between Coats

High grade lacquer finishes are being applied at the present time with only three minutes drying between coats, at 125-deg. F. After the last coat an interval of about 15 minutes at the same temperature is advised before the sanding operation. Of course, adequate ventilation is necessary in the drying chamber, as lacquers dry by evaporation.

Smoothness of Final Finish

The smaller the proportion of thinner added to a lacquer for spraying, the more the "orange-peel" effect. Conversely, more thinner, less "orange-peel." It would seem, at first thought, that there is no reason whatever for not being able to produce a smooth finish by simply increasing the proportion of thinner. The difficulty is, that when more thinner is added, more spray coats of lacquer are required to produce the desired finish. It is found, therefore, to be more economical to spray with less thinner, thereby applying fewer coats, and then to sand out the "orange-peel" with sandpaper and oil or other sanding liquid.

"Pull Outs"

"Pull outs" are frequently encountered on the polishing deck. These are small comet shaped blemishes on the finish, caused by some particle of foreign substance being pulled out of the film by the polishing pad. A lacquer should be kept free from foreign material such as cinders, dirt, lint, etc. The trouble may also come from unclean conditions in the proximity of the spray booths.

FLINT LACQUER PRIMER

Flint Lacquer Primer is accepted in industries today as the clear lacquer first coater that has satisfactorily passed the rigid test of widespread industrial use extending over a long period. The marked advantage of its uses in comparison with any other foundation for lacquer, has made Flint Lacquer Primer indispensable to both the large and the small finisher.

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Touch Up Work

Very few bodies get by the inspectors without having to be patched. There will be places where the finish has been rubbed too thin, or even rubbed through. Or the finish may have been bumped while in a wet condition. These marred places must be patched with the same lacquer as was orginally used, leaving no evidence of the patch.

It requires close control of formulation to insure the absence of trouble in patching. Because of the differences in density possessed by the various pigments, and because of the difference in the drying time between the main part of the body and of the patch respectively, a slight "floating" of the pigment frequently takes place which causes an off-colored ring to appear about the edges of the repaired spot.

There has been noticeable improvement in the last few months in the facility with which touch-up work can be performed without trouble. There are still some shades which cannot be patched without great difficulty. In the case of some maroons, for example, a touched-up spot is so plainly evident that it is frequently necessary to respray the entire panel. It is hoped that further improvements along this line will be forthcoming.

It is a recognized fact that the finishing cost with certain colors averages considerably higher than with others. If there is, however, a public demand for these more expensive shades, bodies will undoubtedly be finished with them. Care should be taken that the finishing engineer does not underestimate his coats when, for example, maroons and light creams are involved.

"Mist Coating"

After the "orange-peel" has been removed by the sanding operation there will always be left the small scratch lines of sandpaper. These can all be removed by sufficient work with rubbing compound. A large portion of this hard rubbing can be avoided, however, by use of a "mist-coat." This is not used in all shops and, because of its advantage, it is worthy of full discussion.

The mist-coating operation consists of applying a very wet coat of a high grade thinner containing a large proportion of active slow solvent to the finish after the sanding operation. Its effect is to dissolve the top layer of dried lacquer and thereby cause it to flow out into the sandpaper scratches, building them up level with the rest of the surface. Since hoods and bodies are frequently finished in different shops, it occasionally happens that the mist-coating operation will have been performed on one and not on the other. In these cases the difference in the finish is very marked —even to the inexperienced eye. It is believed that the custom of mist coating should be universally adopted.

More Complete Sanding

In the past it has been customary, where lower costs were desired, to confine the operation of sanding out the "orange-peel" to the most conspicuous places. Perhaps half of the cost of sanding may be saved by this practice. Because, however, of the more critical attitude of the public, this custom is almost abandoned. It is needless to state that it is well to sand the cowl and upper portions well, even if other places are slighted.

Rubbing and Polishing

Many devices operated by electricity and by compressed air have been devised in attempts to produce a machine which will save a large amount of the muscle work now expended in the operations of sanding and polishing. Two general types have been offered, the rotary type, in which a rotating member is attached to a flexible shaft; and a reciprocating type, in which the power is applied on the inside of a member light enough to hold in the hand.

It has been the writer's experience that the rotary types leave whorls which are plainly visible, and difficult to remove, while the reciprocating types, because of their necessary lightness, knock themselves to pieces in a short time. The necessity of excessive lubrication in the reciprocating type makes them particularly unsuited for sanding surfaces because of the constant spattering of oil on the work. If such machines can be perfected, and they probably will be eventually, they will fill a great need in the finishing shop.

Buffing

In many custom refinishing shops it is the practice to buff after polishing, using a clean, soft-cotton buffing wheel on a flexible shaft, without buffing compound. This operation results in a considerable improvement in the final finish. This is mentioned here because it is believed that this is not being done in any automotive manufacturing plants.

Masking

The masking operation as carried out at present is slow and expensive. It would seem that it would be well to devote considerable time and attention to devising some improved system of masking. It is believed that such efforts would be well repaid.

Using Lacquer Safely

Any discussion of lacquers invariably brings up the question of safety precautions and fire hazard. It is the consensus of opinion that the prime requisites for safe operation are adequate ventilation and good housekeeping.

With reference to ventilation, attention is called to the Michigan regulations for spray coating issued by the Michigan Department of Labor and Industry. Rule 6 (b) states that exhaust systems shall be so designed as to maintain an average air velocity of not less than 90-ft. (linear) per minute at the face of the booth. This appears to be satisfactory for the ordinary booth, but it is believed that this rule should be given an interpretation by the committee when the customary staggered spray booths are used.

Good Housekeeping

Daily cleaning to remove dust is of vital importance. It is believed that the dust hazard is much more to be feared than the volatile solvent hazard, for the reason that ventilation can be maintained mechanically, while good housekeeping requires labor and supervision.

One very vital reason for good housekeeping, other than as a safety precaution, is that it materially lowers costs and improves the general appearance of some finishes. Small particles of dust or lint settling on the wet lacquer are likely to show themselves up as "pull outs" on the polished surface.

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FLAT LACQUER

This new flat lacquer dries in one hour with rubbed effect. When used with our Gloss Lacquer this product produces a very satisfactory lacquer finish . . . and at a cost far below the usual cost of a lacquer finish. It is supplied only in the clear and has been produced especially for users of clear lacquers and varnishes. The quality . . . and the price . . . will surprise you.

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This product can be used as a final finish, producing a rich, glossy surface . . . has covering capacity equal to ordinary rubbing varnish.

It makes an excellent lacquer filler for use under our new Flat Lacquer and can also be used under any clear lacquer—in place of shellac or shellac substitute.

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On the other hand the dust from a bleeding red or maroon, settling on a light color, will produce red spots of such persistence that it is frequently necessary to sand them down to the undercoats to remove them. This sanding down and refinishing will probably cost almost as much because of its special nature, as an ordinary job that has passed through the regular line in perfect condition.

What Causes Paint and Varnish Cracks

Most paint and varnish materials have a tendency to dry from the top down; that is, they will harden on the top within a few hours and yet be more or less soft underneath, requiring considerable time before they are hardened through the entire thickness of the coating. If another coat is applied before this oxidation or drying has proceeded far enough, or if too heavy a coat is applied, the top film begins to harden first and soon forms a layer which prevents oxygen from getting to the bottom where the material is only partially hardened.

If the finish is subjected to a change in temperature at this time, there will be an expansion and a contraction of the metal, and the finishing material will have to expand and contract also. Now the portion of the film that is not thoroughly dried will expand and contract over a greater distance, with a given change in temperature, than will the hardened top film. As a result the top film will be broken and checks and cracks will appear.

Not only will this happen with any great or sudden change in temperature, but there is also danger under the above mentioned conditions of cracking and checking taking place, due solely to the fact that as the undried portion of the film finally becomes hard and dry it shrinks in volume ever so slightly; since the top film is already hard and dry it will not be sufficiently elastic to "move" with the under portion, and will be broken in places.

This condition is illustrated by the familiar example of the drying of river-bank mud under a hot sun. The top mud dries first and becomes very hard, shrinking in volume as it dries. Later, as the drying proceeds downward, the top film of mud is no longer sufficiently elastic and it cracks into sections of irregular size and shape, the cracks becoming larger and deeper as the drying proceeds.—L. F. Worlender.

Behr and Manning Unite

On May 22, 1928 the Manning Abrasive Co., Inc of Troy, N. Y., and Herman Behr & Co., Inc., Brooklyn, N. Y., consolidated under the name of Behr-Manning Corp. This consolidation, combining the resources, technical knowledge and experience of these two well-known manufacturers of sandpaper and general coated abrasive products, will, it is announced, "contribute to the excellency of their many famous products, as well as offer even better service to their thousands of customers throughout the world."

No immediate changes are contemplated in connection with the manufacturing or sales policies of either company, except to establish close contact between the manufacturing and technical organizations, which will without doubt, add greatly to the skill of manufacture and maintenance of quality which for many years has characterized both concerns. Herman Behr & Co.'s factory in Brooklyn, N. Y., and the Manning Abrasive Co.'s factory in Troy, N. Y., will both be continued in operation as before, and orders and communications may be sent to the Behr-Manning Corp., at either address.

REQUIRES
NO RUBBING

ALREADY
RUBBED
VARNISH

Looks like a Rubbed Job—
Feels like a Rubbed Job

A Rubbed Job
without rubbing
Dries hard over night

Advance Paint Co.
Manufacturers of
Wood-finishing Materials
FACTORIES
Indianapolis and Evansville
Indiana

Modern Finishes for Wood Caskets

A discussion of the natural wood, color enamel and metallized finishes used on wooden burial cases, including information on the latest materials and methods employed in this class of work

By S. P. Wilson

SINCE caskets must be made to fit all purses, naturally a wide variety of finishes and basic materials are employed in their manufacture. Between the cheap varnished oak or chestnut and the ornately silver-plated casket lies a wide gap, but within the price range the manufacturer has as his goal a finish that combines beauty, dignity and durability. The last quality seems rather unnecessary when the final destination of the casket is considered, but when we recall that caskets often remain in warehouses, show rooms and morticians' parlors for years before being sold, the word "durability" takes on a real significance.

Wooden caskets have been the standard for centuries, and it is only recently that manufacturers of metal caskets have succeeded in securing a really substantial share of the business. As mentioned above, the qualities of caskets vary widely as does the quality of the finishing materials used.

Wooden Casket Finishes

Finishes for wooden caskets may be divided into three general types—clear finish, enamel finish, and metallized finish. The first type has problems practically identical with those of the wooden furniture industry, inasmuch as we have wood surfaces to stain, fill and varnish or lacquer. This is complicated by the fact that the wood generally used in casket manufacture — particularly oak, chestnut and cypress—have open grains that are troublesome both in the cabinet and finishing rooms.

Asphaltum Stain Finish

The cheapest finish and one which is far from being obsolete, consists in using an asphaltum stain, a heavy paste filler and one coat of heavy gloss varnish brush on the work. From this to a high-grade finish on rosewood, mahogany or walnut—double-filled, and finished with three or four coats of lacquer rubbed and polished—we have all the gradations of finish found in the furniture industry. While varnish, and particularly cheap varnish, is by far the most widely used for this type of work, there is a growing interest in the possibilities of lacquer.

Lacquer Is Favored

The hardness and clarity of a lacquer finish seem to be favorable influences, but the chief reason is undoubtedly the speed with which the finish can be applied. In many factories, large stocks of different models and finishes must be kept to meet the continual rush orders, which are probably more frequent in the casket industry than in most others. By adopting lacquer, a greatly reduced stock of stained, filled and sealed caskets can be kept, and the desired model in a gloss, rubbed or flat

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Grand Rapids Blow Pipe and Dust Arrester Company

Dust Collecting Systems 527 Monroe Ave. Grand Rapids, Michigan

Anything

that can

can be finished Better *with*

A GLOWING depth of color and a rich, mellow softness are typical of Egyptian Lacquer. Metals take an amazing warmth and lustre—woodwork reveals unsuspected beauty of grain and texture when Egyptian Lacquers are used.

We invite you to try this simple test: Take two identical articles. Finish one with ordinary lacquer and the other with Egyptian Lacquer. Then decide which you would choose if you were the buyer!

There's nearly half a century of skill and experience behind Egyptian Lacquer finishes. No other lacquer so happily combines present beauty with lasting satisfaction. Our Service Department can fill any unusual "prescription."

The Egyptian Lacquer Mfg. Co., Inc.
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Completely equipped branches in charge of practical men *are maintained in these cities:*

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Special information concerning your particular finish requirements is included in our library of booklets and data. Write us in detail and appropriate material will be sent, free.

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The force of national advertising is steadily being added to the other advantages which Egyptian Lacquers possess. The campaign in the *Saturday Evening Post* continues through the year. This means even greater public acceptance and approval of products and surfaces finished with Egyptian Lacquer.

The maker who is proud of what he makes, uses Egyptian Lacquer

FOR OVER 40 YEARS

This symbol is the Egyptian Lacquer trade-mark. Its central figure is that of MAAT, *the Egyptian Goddess of Truth*. It typifies the integrity with which all Egyptian Lacquer products are made . . . their precision, balance, and true quality . . .the fidelity with which Egyptian Lacquers meet the particular needs of the manufacturer who seeks true beauty, fine finish and permanent protection for the products that he makes.

EGYPTIAN Lacquers

TUMBLING LACQUER

USE

L-24 for WOOD HANDLES
L-24 for SMALL ARTICLES

Reduces cost of production

Cheaper than dipping

A large number of objects coated any desired color with one process

Quick Drying—Water-Proof

Smooth Gloss Finish

You will be Surprised

HOW YOU CAN SAVE MONEY

Using This Lacquer

Half a barrel of wood handles coated in 25 minutes

Let us tell you how it is done

And remember

Walkers Service With Walkers Lacquers

Henry V. Walker Co.

17 John St., N. Y.

finish can be turned out more rapidly on receipt of the order.

It seems probable that casket makers who are prejudiced against lacquer will look with favor on the new six-hour varnishes. Durable varnishes now are available which can be lightly sanded and recoated within six hours after the first coat is applied, and which are dry enough next morning to permit of rubbing and shipping.

Finishing In Enamel

The second type of finish, the enamel, needs little discussion. The colors used are almost entirely white, gray and lavender. The wood is generally filled by applying one or two coats of a quick-drying surfacer; then it is sanded and finished with two to four coats of either oil or lacquer enamel. Lacquer seems to predominate here, owing chiefly to its hardness and consequent freedom from marring.

When cypress is used for the casket, a frequent difficulty is the continual raising and ridging of the grain which remains visible after many coats of material have been applied. This trouble, also occurs with fir and certain other woods, but it has been solved by some makers by using a thin glue size over the wood. The glue-sized surface is sanded before the first undercoat is applied and what remains in the pores seems to hold down the grain, thereby permitting a suitable finish.

Imitation Of Metal

The metallized effect on wood caskets is growing in popularity and when properly applied it gives a beautiful and dignified finish. The woods used include oak, chestnut and cypress; these should be glue-sized as mentioned above. Over this a coat of gray oil surfacer is applied, allowed to dry overnight, sanded and followed by a coat of light gray lacquer enamel.

Over this enamel the workman sprays from one to three coats of a lacquer bronzing liquid—containing two pounds of a very fine aluminum powder to the gallon—followed by one or two coats of a special high-gloss, smooth-flowing, clear lacquer which, when rightly applied, needs no polishing.

Shading is frequently done and the bluish-black, shading lacquer is used over the aluminum and under the clear coat, the workman using a small shading gun for the work. This shading lacquer is also used over silver-plated and cadmium-plated parts and must be absolutely smooth and non-bleeding, as it is generally used under a clear lacquer top-coat. This finish gives a close approximation to a high-grade metal casket, with greatly decreased weight and costs.

Stipple finishes are being used on both metal and wooden caskets, although apparently to a lesser degree now than a few years ago. This finish is obtained by spraying a stipple finish material with a specially large nozzle at the low pressure of 15 to 30-lbs.

The paste is irregularly blown onto the surface and dries to a series of raised blobs. Over this, the bronze finish is applied and an antiquing effect may be given by rubbing in japan or oil colors reduced with naphtha. Oil stipple pastes are now available and these are usually applied by hand and roughened and ridged with a stiff brush or sponge. After overnight drying and a light sanding, the stipple is ready for the next operations.

Industrial Finishing

Issued tenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

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Publishers

Office; 802 Wulsin Bldg., Indianapolis, Ind. Telephone, Riley 6771. President, A. T. Gaumer; Vice-President and Managing Editor, W. H. Rohr; Secretary, R. E. Suits; Treasurer, E. A. Dosch.

Subscription rates, $1.00 per year in U. S. and possessions; $1.50 per year in Canada and $2.00 per year in foreign countries.

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EDITORIAL

Art Moderne at Furniture Style Market

The Mid-Summer Furniture Market at Grand Rapids, opened with a large showing by many regular exhibitors.

In the show spaces the scenes are particularly interesting. The out-standing feature of them all is Art Moderne. At the January market, Art Moderne was the one thing everyone was demanding and some of the factories with extensive lines of this new type of design in furniture have been doing a big business with it every since. At this market nearly every line has some Art Moderne in it.

Some of this type of furniture is conservative in design and finish, but some of it may be classed as "extreme." It is interesting to note how some designers have taken the motif and used it conservatively in the construction of a beautiful piece of furniture that can properly be classed as modest and quiet, while other designers seem to have gone to the limit in drawing acute and obtuse angles. One manufacturer has stuck to the usual cabinet woods, while another has combed the jungles of the world for startling and striking woods to give the bizarre effects which this Art Moderne, in its extreme, requires.

The question is, how long is this Art Moderne going to last? Most of the manufacturers are of the opinion that it has come to stay, and that we are now seeing only the beginning of it. However, the demand has been for something new, and here it is.

Art Moderne is entirely different from the usual; it is entirely off the beaten trails of furniture design. It has certain advantages over many of the other types in that it is easily cleaned, it is bright and snappy—in keeping with the age in which we are now living—and it is exceedingly comfortable in actual usage.

Moreover, the tendency in all lines is right along this groove. Magazines are filled with it, art itself is along this line and illustrations of every conceivable thing are in Art Moderne, and so it appears that furniture is going to it strong at this market.

Economical Maintenance Painting

A new development within the past few years, and one which has greatly reduced the cost of factory upkeep, is the extensive use of portable spray outfits which occupy small space and take power from any electric light socket. This has greatly extended

the scope of the industrial finisher inasmuch as the finishing department, in most plants, has the only available men competent to handle the spray gun, and when there is any spray painting to be done the finishing department usually furnishes the men.

A man who has spent most of his past ten years in going through various types of industrial plants was recently struck by the fact that the general appearance of factory interiors had been gradually improved—that dark dingy corners had been eliminated; ceilings were brighter and walls were cleaner.

Being of somewhat analytical turn of mind, he decided to investigate the causes for these changes and learn just what was back of them. Naturally he took into consideration the fact that some factories were new—that time had not yet affected them—but a hasty review showed that these new plants were in the minority; many plants which showed the greatest improvement were more than ten years old.

Accordingly he began asking questions and received various replies. Some concerns had taken the view that such things as better light meant better production through better health; others took the view that their investments were better safeguarded through the additional value given by well-kept plants; and still others claimed that their eyes were opened during the period of large profits and heavy taxes immediately following the war, when they were trying to find places to spend money in betterment rather than pay such heavy excess profit taxes.

However, these answers did not entirely satisfy. This man felt there was something back of it all and finally the question of the cost of painting entered his mind. In every case where the interior of a large plant had been painted, the finish had been sprayed on—never brushed, and in only three out of ten plants had any outside help been employed. Men from the finishing department had done the work when production orders lagged. Instead of being laid off until work picked up, the finishers had been retained and employed on maintainence painting.

In 18 plants where the investigator inquired, it developed that the management would not have ordered this work done if outside painters had been required. The high cost of labor would have been prohibitive. By putting their own finishers at this work with spray guns, they achieved the following results:

1—They had kept their finishers at work during dull periods.

2—They had greatly improved working conditions and this, in turn, had reflected itself in better health among workmen and better production.

3—They had increased the value of their investment to a much greater extent than if they had spent the same amount of money some other way.

Maintainence painting during a lull in production activity—using modern spray equipment and skilled finishers—should be even more extensively practiced.

Grinding, Cleaning, Polishing and Buffing Equipment

Bulletin No. 500 just issued by Stow Mfg. Co. Inc., inventors and builders of flexible shafts and electric tools, Binghamton, N. Y., lists and illustrates a considerable variety of tools and equipment for grinding, cleaning, polishing, and buffing operations in industry.

New Wood Finish Developed

A new attractive finish, recently developed by a well known concern, should interest all furniture manufacturers. The result obtained is a wood finished in lacquer enamels with a colored grain filler.

To get this finish it is first necessary to select a wood that has a fairly deep grain such as oak, walnut or mahogany; quartered oak finishes best. Sand the wood surface smoothly and wipe out the grain as clean as possible with a coarse, stiff-bristle brush. A wire brush produces a much better job, but if used it is necessary to sand the wood lightly again in order to cut down the nibs which it raises.

After the pores have been opened as much as possible and the surface of the wood has been sanded smooth, one coat of lacquer enamel is applied. This is allowed to dry for about three or four hours and then a colored wood filler is rubbed well into the pores of the enameled surface.

As the filler starts to set hard it is wiped across the grain in the same manner as any other filler. The panel may be trimmed with a third color for a real rich effect. For example, use oak wood, light jade green as the base enamel, orange grain filler and a bluish green of fairly dark shade for the trim color. It will be necessary to let the filler dry overnight before the trim color is applied. A clear flat lacquer as a top coat will protect the color in the pores and also will give it the appearance of a rubbed job.

If the foreman finisher wishes to try this out and needs a temporary filler for this purpose he can obtain one by tinting natural wood filler with a color ground in japan.—Joseph M. Verderosa.

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Rosin Ester Gum	115°C
Congo " "	135°C
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WOOD STAINS
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To Sell Cellulose Acetate

The firm of Irving Puttmann of No. 1 Boulevard Haussmann, Paris, France, has opened offices in the Graybar Bldg., 420 Lexington Ave., New York City, specializing in the sale of cellulose acetate and its products.

Specifications for Aircraft Finishing

The above title is the name of a new booklet of 26 pages, size 8¼x11-in., containing detailed specifications and information relating to every phase of aircraft finishing. It is the third edition of this work prepared, published and distributed by Berry Bros., Inc., 211 Leib St., Detroit, Mich.

Devoted to—
Questions
Answers
Suggestions
Comments and
Discussions on
Specific Problems

Questions and Answers

Information Service

Every issue of *Industrial Finishing* contains a wealth of practical information on various subjects of interest to users of finishes and finishing equipment, but from time to time new problems and questions arise, which demand prompt and authentic information. *Industrial Finishing* is in position to service inquiries, and the editor invites all individuals and concerns in the industry to make known their wants. Every effort will be made to supply the information desired, at no cost to you.

Questions are invited in regard to:

Finishing-room troubles or problems;
Where to obtain certain materials, supplies or equipment;
What methods or materials to use for certain results.

Additional comments or suggestions regarding questions, answers or articles appearing in this section, are invited.

A Lacquer Finish That Has Stood the Test

M. & W. Co. 1876

M & W White Refrigerator Lacquer Enamel has been adopted for the following

Reasons

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No. 2—**APPLICATION DIFFICULTIES** are minimized.
No. 3—**TOUGHNESS** and **DURABILITY.**
No. 4—**EASE** of cleaning after assembly.
No. 5—Does not **CHIP** where drilling is necessary.
No. 6—Has been built upon many years of **EXPERIENCE** and Research in the Manufacture of Lacquers and Enamels for finishing Metal and Wood.
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Spray two coats over M & W Lacquer Primer or M & W Oil Base Primer to produce a LASTING, BEAUTIFUL FINISH.

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Questions and Answers

This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

Dip Finishing Buttons

I would like to know the best method for dipping small buttons, about one half inch in diameter, in cellulose varnish to give a bright finish, instead of buffing them. The difficulty is that they stick together when withdrawing them from the dipping vat. The Germans have a method of dipping and they get a good clean finish.—G. C.W—Birmingham.Eng.

You do not say of what materials the small buttons in question are made, nor whether any color coats of finishing materials have been applied before you desire to put on the cellulose varnish. I assume that the cellulose varnish to which you refer is a clear material and possibly no color coats are used under it.

If this is the case, my suggestion would be that the buttons be dipped in the cellulose varnish in an open mesh basket; allow to drain until the cellulose varnish has about quit dripping, and then dump the buttons into a tumbling barrel where they can be rotated and rattled around until the lacquer is dry enough for them not to stick together

At this point, bits of old newspapers, or some other soft material of a like nature, should be thrown into the tumbling barrel with the buttons and the tumbling continued for some time; the newspaper will have a buffing or polishing action on the cellulose varnish and bring it to a high polish.—R. L. Masterson.

Solvents For Fast Color Spirit Dyes

What solvent (other than alcohol) can be used for a spirit fast-color dye powder in green, blue, violet and red, as supplied by a large and nationally-known manufacturer of nitrocellulose lacquers? I am with a manufacturer of reed furniture and use this dye for tinting or "over-spraying." If you can supply any information in regard to what solvent to use, I will appreciate it.—C. B.

Some of the dyes used in connection with nitrocellulose lacquers are as follows;

Oil Red, Rhodamine, Chrysiodine, Ceratin Scarlet.
Spirit Nigrosine.
Green Crystals.
Oil Blue, Spirit Blue, Methyl Violet.
Soudan Brown, Oil Brown, Bismarck Brown.
Oil Yellow, Azo Yellow, Auromine Yellow.

The solvents used in connection with the cutting of dyes follow:

Alcohol, Butyl Acetate, Benzol, Toluol, Methyl.
Alcohol, Butyl Alcohol, Acetone, Amyl Acetate.

In the introduction of a dye solution to a clear nitrocellulose

lacquer, it is sometimes advisable to have as a dye cutting medium, an active nitrocellulose solvent. To this end, butyl acetate is recommended. By the use of an active nitrocellulose solvent in the dye solution, the combatability of the dye solution, when it is incorporated with the clear lacquer, is much greater because the active solvent is a "cotton cutter" and therefore will blend with the cotton solution with greater affinity.

If straight alcohol, benzol or toluol were used as the dye-cutting medium, care would be necessarily exercised and the dye solution titrated carefully, for fear of "kicking" the cotton out of solution.

Whenever dyes are cut, it is essential that the solution be allowed to remain 12 hours before filtration. This is done to insure the thorough concentration of the dye solution.

It has been found advisable sometimes, to incorporate a minimum amount of clear lacquer with the dye solution; the specific gravity of the liquid content being comparatively light, the addition of clear lacquer will hold the dye in suspension and will give the dye solution a little more "heft" in the event the dye solution is used as a stain by the use of a spray gun.

The type of clear lacquer that would be recommended is essentially one made on the basis of low viscosity cotton.—M. C. Roberts.

Streaks in Lacquer Enameled Gum

We are experiencing considerable trouble with streaks appearing in panels after they have received the following treatment: One coat of gray or cream lacquer undercoater, two coats of gray or cream lacquer enamel, one coat of clear lacquer. We apply the above on five-ply gum panels. The streaks do not show up until after the clear lacquer is applied. We would appreciate it if you can give us any suggestions for overcoming this trouble. —H. Mfg. Co.

You do not explain exactly the nature of the streaks which you are experiencing on your gray or cream lacquer-enamel work, which has been coated over with one coat of clear lacquer.

If these streaks are of a pinkish or reddish tone, it is apparent that you are getting some bleeding action from an oil or spirit-soluble color which gets on to the work in some manner—either through being mixed with the reducer you use or being present in the spraying container, in the hose of your spray gun, on the surface of the wood, or in a number of other ways. If this is the type of streaks you are getting, it will be necessary for you to locate this bleeding material and eliminate it, as no number of lacquer coats applied over it will prevent the color from showing through.

If the streaks to which you refer are in the nature of variations in shade of the gray or cream material, or if they have the appearance of being like dark streaks, your trouble is probably due either to the gray or cream lacquer undercoater and lacquer enamel not having sufficient hiding power, not being applied heavily enough, or more probably it may be due to the spray operator not applying these materials uniformly, so that a heavier coat is put on in one

section of the work than on another section.

The spray operator probably is not laying successive streams of finishing material properly one over the other (at the edges) as he passes the spray gun backwards and forwards across the surface, or it may be that the spray gun itself is at fault and throws a heavier stream of material at the top or bottom of the fan-shaped stream or lacquer than in the center of the stream.

Another cause for this same type of streaked work would be if the clear lacquer is not applied uniformly—particularly if the clear lacquer is not as pale in color as it might be—giving unevenness of coating with the clear lacquer over pale colors, such as gray, or cream, and causing a variation in the resulting color. Since you say that the streaks do not show up until after the clear lacquer is applied, this may be the cause of your trouble.—R. L. Masterson.

Hotel Furniture—Restoring Marred Finish

Can you tell me of something to use on furniture to remove white spots caused by liquor, ginger ale, water, etc? The furniture is varnished and lacquered. I have used alcohol and lacquer thinner with fairly good results but to put either in the hands of the maids is harmful to the furniture, as it is difficult to train them to use it properly—Hotel Head Painter.

This question is one of the bugbears which is hard to solve in a manner to be of service. Repairing white spots on furniture is a job

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Two new features of the Milburn Paint and Lacquer Spray Gun make this gun as big an improvement over other guns as spray painting is an improvement over brush painting.

The air adjustment is controlled by a knurled nut which allows an almost unlimited variation of spray widths and atomization. The nut is dialed and when the operator has once found which positions are best for each class of work, he can turn to the proper setting immediately.

Furthermore, the degree to which adjustments can be controlled by this new feature avoids "split sprays," "over sprays," and "heavy centers."

Similar numbered adjustments appear on the material valve plunger. The proper paint volume is obtained instantly without experiment or testing.

To use a radio term, these features allow you to "tune in," instantly, on the best adjustments for the work in hand.

The Milburn Gun has a frame of forged tobin bronze with a tensile strength of 50,000 pounds to the square inch. This makes it practically indestructible and impossible to get out of alignment. It also makes it the lightest gun made as well as the strongest.

Investigate these remarkable new features. Write for Bulletin 4677.

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for a finisher and not a maid. The same question arises about as regularly as the sun or the moon and there is not much solution for it that would benefit a person without experience. In wood finishing the only permanent remedy for this condition is to bring back the color with a little alcohol and an application of linseed oil; then recoat and rerub the work to make it permanent.—F. W. Purdon.

The answer to the query is very simple. I would order one quart of a certain brand* of lacquer and use it. This lacquer can be applied with a cloth and will remove marks caused by almost any kind of liquid or liquor, and it will be safe to put in the hands of hotel maids. This is the quickest way I know of to remove stains or hot dish marks from lacquer. This lacquer can also be sprayed or brushed on with wonderful results. I have used it and can safely recommend it.—John Shearer.

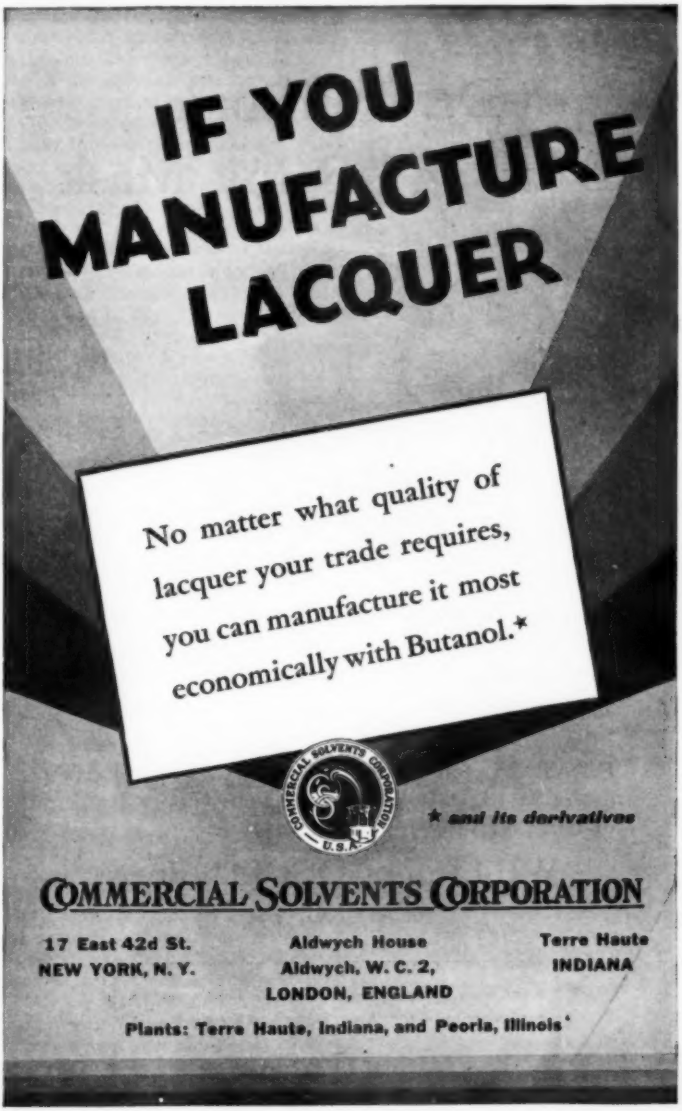
* Name furnished on request.

Recovering Wasted Spray Lacquer

I am interested in learning what can be done with wasted and dirty lacquer; also other finishing materials. I have a faint recollection of reading an article about lacquer and thinner being strained and sold to tanneries—I believe it was tanneries.

Well, what about the solid stuff that collects inside the booths and exhaust piping? It is a constant fire hazard.—Platt.

We have given this particular question considerable attention for several years. It might be pos-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sible through "chemical research" that same could be reduced back to nitrated cotton and used as a by product for explosives, but up to the present time the writer has not heard of any attempt.

The dust from nitrocellulose is highly inflammable and explosive; care must be taken as to keeping the booth and its surrounding area thoroughly clean; all electrical appliances should be kept a reasonable distance away from the sprayer. Continuous layers of this dust may "break out" spontaneously. I have seen a demonstration of this dust whereby, through faulty electrical work, it had scattered in all directions and caused five fires in different parts of the room. Its action, when in contact with fire, is just like a firecracker.

It has been my practice to line my booths with paper which can be taken down every week, thereby no permanent accumulation is possible. Never use a steel knife of wire brush when cleaning fans or other parts, as they also will cause a spark and the result may be fatal.—Lawrence Hess, Jr.

I happen to know of some furniture plants who spray a wet coat of lacquer thinner over the hardened lacquer in the booth and pipes, then scrape off the accumulated lacquer, place the material in a container, add lacquer thinner and some clear lacquer (to clear the lacquer waste material) and strain. They can use this material for inside work such as drawers, the backs of doors, and also as a first coater and sealing coat.

Pigmented lacquers or lacquer enamels are recovered and used the same way. Add thinner and some lacquer enamel, strain and

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WE carry complete lines of quality paints, varnishes, lacquers, brushes and all other necessary tools used in a modern finishing shop. Our prices are surprisingly low for the quality of merchandise sold. Our prompt shipments will save you time.

It will be worth your while to have our Catalog No. 48 on hand. Send the coupon below for it.

Among the large variety of scraping knives that we carry, the ones listed here are very popular. They are made with a rosewood handle and are brass riveted. Very strong.

Width	*Per doz.*	*Each*
2-½ in., extra quality, stiff or elastic	$7.00	$0.70
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Stille's Aqua Perma STAIN!

Fast to light.
Will not raise grain.
Dries quickly.
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Has more depth.
Uniforms color variation in same run of lumber.
Filler can be applied directly over it without requiring a wash coat.
Unusually deep rich color tone.
Can be dipped or sprayed with equally good results.
Requires no sanding.

Among the many developments that have come out of the scientific research for better materials to meet present day requirements, AQUA PERMA STAIN takes rank with the leaders because of the importance of stain. To eliminate all the disadvantages of water stain, yet embody its good points in connection with those of oil stains, places AQUA PERMA STAIN in a position to give the most satisfactory results.

Send for samples of this wonderful new material TODAY, and get full information on our novel proposition.

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use accordingly. To reclaim shellac, scrape it up, reduce it with alcohol and strain; then it is ready for use.

Varnish also can be recovered; I know of some cases where the waste material has been scraped off, put into containers and returned to the varnish makers to be recooked or melted down, then reduced to the desired body, filtered and then shipped back in condition for use.—Joseph Cowan.

If the spray booths and floors are lined with detachable sections of metal—preferably amalgamated with mercury—these can be removed at night, placed in thinner and the resulting material used as a first-coater. If dirt accumulates with the spray dust, this lacquer will have to be strained either through several layers of cheesecloth or better still, centrifuged or filter pressed.

Since it is common practice to use greases for lining the inside of spray booths, it should be said here that any lacquer that has come in contact with grease is no longer suitable for reworking. Unless booths are used continuously and a sizable accumulation is secured, it will not pay to rework spray lacquer waste.

Dipping lacquers give considerable drip and it is common practice with large users of dipping lacquer to re-dissolve these drippings and use them over again. Here too the removal of drippings from the drain boards can be facilitated by coating the metal with mercury to which lacquer has no adherence. The same precautions as regards eliminating dirt hold true here also.—S. P. Wilson.

The rupee of India equals about 36 cents in American money.

Good news!

Lacquer Speed with the effect of Varnish

A new and revolutionary finish is captivating the interest of the industrial finishing world—Murphy *Flexible* Lacquers—the finishing material combining the speed of lacquer with the best features of varnish.

A mere reading of the accomplishments of Murphy *Flexible* Lacquers is enough to arouse the interest of any manufacturer who is not yet familiar with this material.

We simply ask that you bear your particular work in mind as you read the following list of the characteristics, and appreciate what they would mean to you in your production:

1. The basic ingredient of Murphy *Flexible* Lacquers is not nitrocellulose.
2. They build far better than ordinary lacquers.
3. They rub with a pull like varnish, instead of sliding as lacquer does.
4. Polish—we have never seen, even with varnish, a polish of higher brightness. And, unlike lacquer, the finish increases in clarity as it ages, instead of fogging.
5. These lacquers toughen with age, instead of chalking and checking.
6. Like varnish, they have a plastic resistance to the expansion and contraction of wood—a notable failure of the rigid finish of nitrocellulose lacquer. They are unaffected by humidity-checking, so much deplored in lacquer.
7. They give the appearance and "feel" of varnish instead of the cold, glass-like surface of lacquer.
8. They are waterproof.
9. They dry as quickly and will wear longer than lacquer, but look and act like varnish.

If there is anything more you would like to know about this revolutionary material, we shall be glad to send you more information or arrange for a demonstration.

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New Materials and Equipment

Presenting briefly, certain outstanding features of new materials and improved equipment which have been developed for use in modern industrial finishing departments

New Portable Air-Painting Outfit

The Paasche Airbrush Co., Chicago, Ill., announces a new light weight portable air-painting unit, cut of which appears herewith.

It can be plugged in any lamp socket and may be carried easily from room to room. In fact, the outfit is so small and compact that it can be used in retail stores, artist's studios, schools, or even in the home.

New Materials for Imitating Wood Grain

Henry V. Walker Co., 17 John St., New York City has recently placed on the market "a new ground-coat lacquer enamel, by use of which the most costly woods may be successfully imitated by any lacquer spray operator." By this new process an oak, walnut or mahogany effect may be imparted to wood totally devoid of grain markings, or these richly grained effects may be reproduced on metal.

The surface is first treated with a suitable primer on which the ground-coat is lightly sprayed. Composition hand-rollers, such as printers use, are provided on which the desired grain is made. These rollers are inked and rolled over the ground-coat leaving the desired grain effect printed on the ground-coat. When the ink is dry, the surface is given a wet spray coat of special lacquer for a semi-gloss finish. The resultant effect is a clever imitation of any of the three expensive woods mentioned.

"No-Tarnish" Lacquer

The Atlantic Chemical Co., 1186 Grove St., Irvington, N. J., announces in an interesting circular a "No-Tarnish" colorless lacquer which is heralded as being "waterproof, transparent, flexible, adhesive and durable." The object of the material is to supply a protective film which preserves the luster of nickel plating, brass, silver, copper, aluminum, German silver, steel and all other metals.

According to information submitted, this material "can be brushed on by an amateur without leaving brush marks, or it can be sprayed or dipped." Also, "the life of 'No-Tarnish' depends upon the care that is used in preparing the metal before application, as

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well as the wear to which it is subjected. Inside metals will retain their luster from two to ten years and those exposed to the weather from one to four months." Bronze powders can be mixed with this clear lacquer to produce gilding finishes.

New Improved Spray Gun

The Alexander Milburn Co., 1416 W. Baltimore St., Baltimore, Md., has brought out a new spray gun which, according to the announcement, has two important features that constitute real improvements. First, there is a dialed head which

gives numerous different spray adjustments from a circular spray to a fan of a wider field than has heretofore been possible. The dialing permits the operator to attain any desired spray instantly without first making trial tests.

Second, there is a series of indicator numerals on the paint valve plunger. A pointer is operated as the operator turns the adjustment button. Just as the dial in the head produces the exact spray wanted, so the indicator numerals on the paint valve plunger provide

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We specialize particularly in Lacquers: Clear, Rubbed Effect and Colored.
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Finishing costs have been reduced because Amerilac Lacquers are easily applied, give greater coverage and require less sanding. By actual experience, they have proven to be the proper materials for modern requirements in finishing.

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the exact volume desired without the necessity of losing time by testing. The operator, having found that a certain class of work is best performed when the indicator points to a certain figure, makes the proper adjustment before beginning to spray.

The new improvements calibrate all operations and enable the operator to instantly make the proper adjustments for perfect operation.

The new Milburn spray gun is known as "Type EF." To enable owners of the Milburn "Type E" gun to obtain the benefit of the improvements, the new dial air control valve and the plunger have been made interchangeable.

"Non-Blushing" Lacquer

Trouble that so often occurs in many finishing departments during the damp, muggy, hot days of summer—trouble due to the precipitation of moisture on the lacquered surface, causing whitening or blushing—has been an influence in the development of a "Non-Blushing Bronze Lacquer" and a "Non-Blushing Finishing Lacquer" announced by Roxalin Flexible Lacquer Co., 105 Seventh Ave., Long Island City, N. Y.

The company claims that by the use of these materials, blushing is prevented at practically no extra cost.

Improved Spray Hose

"Yellow Jacket" paint spray hose has been introduced to the trade by Detroit Rubber Products, Inc., 2841 E. Grand Blvd., Detroit, Mich.

H. W. Fauver, president of this company, in announcing the new product, says that after exhaustive

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IN Du-Pros Shellac, smoothness, durability and economy are developed to a higher degree. Greater smoothness and durability are obtained by better flowing, easier sanding and superior sealing qualities. Du-Pros is exceptionally economical because it builds up a good body with fewer coats. It pays to include a coat or two of Du-Pros in your finishing schedule.

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Lacquers or Varnishes
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Send for five gallons—If not as we claim, return it.

Jamestown
Wood Finishing Co.
Jamestown, N. Y.

experiments they feel that "Yellow Jacket" paint spray hose measures up to all of the requirements for such equipment. It is flexible and long lived; it has a tinned-brass tube, is highly resistant to lacquer material and does not rust or discolor fluid. The new spray hose is easily identified by a woven jacket alternately striped in yellow and black.

Finishing Furniture With Lacquer

In order to obtain the desirable results required in furniture finishing, it is first essential that the wood surface be smooth and free from depressions. To obtain this smooth surface it is customary to sand the wood; this leaves the surface quite dusty. This dust may be wiped off with a dry rag or blown off with compressed air. Care should be exercised in this process to see that the dust is not forced into the pores of the wood.

To get the desired color, it has been found more practical to stain the wood rather than incorporate a dye-stain with a clear lacquer in the hope of reaching a definite shade. It is a known fact that furniture finished with dye lacquer, if placed near a window, is almost sure to be bleached by the sun, the window glass acting as a prism. It is therefore more practical to stain the wood before applying lacquer.

Water stains have proved their adaptability for use under lacquers. This type of recommended stain has great penetrating properties and with the wood fibers colored to a definite shade, the sun's rays are less likely to bleach through the clear lacquer film.

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Now we have a new service to offer our customers and friends. Our art studio is completely equipped to work out your finishing problems under the guidance of one of the most efficient experts in the country.

Send in any piece or suite that you wish. We will be glad to finish it for you, either working out your own suggestions, or using our own judgment to work out an original and suitable design and finish.

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#3 Gloss Lacquer

—exceptionally tough
—dries very hard
—3 coats may be applied in one day
—no harder to rub than ordinary lacquer

#4 Flat Lacquer

—produces a satin finish
—flows smoothly
—imitates a rubbed effect perfectly

We also manufacture a Lacquer Remover of exceptional merit—and our Lacquer Shading Stains and Fillers cannot be surpassed.

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These stains, as their names imply, are thoroughly soluble in water; they are supplied in powder form and can be made in any tint of the regular color by intermixing. These stains are usually applied by a brush or rag and care should be exercised in the application of the stain to see that a sufficient amount of material is put on. The stain should be applied across the grain of the wood to obtain thorough penetration.

Oil Stains

Oil stains are sometimes used but, because of their tendency to bleed and the fact that they sometimes retard the drying of the film of lacquer, they are not generally recommended. These stains are soluble in lacquer solvents or diluents. When one considers that possibly a high-boiling solvent might have been used in cutting the dye or stain and that this high boiler, in penetrating the wood, may have secreted itself in the wood pores—and making allowances for the drying of the stain, when the wet lacquer film (usually built of 70 percent low-boiling solvents) is applied to the wood—the true film of lacquer is likely to remain wet in certain sections. Invaribly high-boiling solvents must be used to insure perfect concentration of the dye or stain, as the low-boiling coal-tar products that are used to cut the dye will leave about 50 percent residue.

Paste Filler

A paste filler is usually applied over the stain. This paste wood-filler, for use under lacquer, is so constructed that it will not shrink when it dries. It is supplied in standard shades in view of the finish desired. When the

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wood being finished has a hard and close grain, the paste wood filler can sometimes be eliminated, but in this case a sanding lacquer-undercoater in recommended.

Sanding Lacquer Undercoater

This sanding lacquer-undercoater, also recommended for use over the paste wood filler, is so constructed that it has many desirable properties—being built on the basis of a true nitrocellulose in all respects. Lacquer drys by the evaporation of the volatile solvents, and in drying some of it "seeps" into the pores of the wood and knits itself to the wood.

The fact that in the application of lacquer, a wet film is applied to the surface—being sprayed onto the surface by compressed air—would indicate that the two mediums—moisture and air—tend to raise the nibs of the wood fiber. These nibs are cut down by fine sandpaper to assist in further reaching the desired smoothness which is so essential to an ideal lacquer finish.

Finishing Coats

After the application of the sanding undercoater, the clear lacquer finishing coats are applied. Usually two or three coatings of lacquer produce a well finished surface. The number of coatings are not limited, and between coatings, the surface is sometimes sanded to help produce a deeper and more velvety finish. The furniture finish in vogue today leans more or less toward a rubbed varnish effect. To this end the desired sheen of flatness is incorporated in the lacquer; this constitutes the last spraying operation.

Some of the excellent features found in the nitrocellulose lac-

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quers are; quick drying features, ease of spray application, perfect leveling and appearance on the finished surfaces, great durability and hardness, waterproofness and alcohol proofness.—M. C. Roberts.

Matching Colors For Lacquered Steel Cabinets

A short time ago I undertook the running of a lacquer job on some steel cabinets to be finished white. These cabinets were to have a finish to match a white porcelain catch basin. The method of procedure, as laid out by the salesman who sold the lacquer, was as follows:

One coat of oil-base lacquer primer, one coat of flat white lacquer and one coat of white lacquer-enamel having one quart of clear lacquer added to one gallon of white enamel to give a high gloss to the finished job.

When this schedule was handed to me, with the instructions to follow it, I immediately saw where the finish wouldn't be what the company expected, and said so. The fault I saw in this was not in the primer nor in the flat white, but in the white lacquer-enamel. The enamel had a slight cream tinge to it and when we added a quart of clear lacquer—which had a decided orange tint—to one gallon of the enamel, then the finish when dry would be a decided cream, with no resemblance to the white porcelain which has a slight bluish tinge.

The final result in color turned out just as I expected it would—a cream. In the meantime I had done a little experimenting with blue added to the white enamel; I had found that by adding 15

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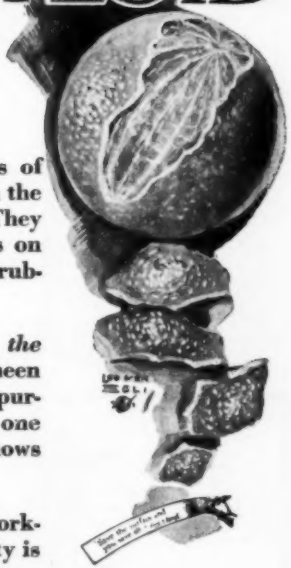
drops of a deep blue to one quart of the white enamel, which had been reduced 50 percent, I matched the color of the porcelain catch basin as nearly as could be desired.

I explained to the assistant superintendent how we could overcome the trouble but he would not change the schedule until he had called in the salesman and shown him the result obtained from the schedule he had given them. When the salesman came he suggested using one mist coat of primer, two coats of flat white and two coats of enamel with the clear lacquer in as before. This gave us a finish of an even deeper cream than before as we had two coats of enamel to bring out the cream instead of one coat.

The salesman was called in again and at my suggestion we tried out the idea of using blue in the white enamel. Here again I ran into trouble as I had no Baume scale and couldn't hold the lacquer to the same mixture in all batches, with the result that, after running 20 jobs, I found there was a slight difference in the luster of the finish when cabinets from different batches of material were set side by side. Finally I obtained a Baume scale and from then on I had no trouble holding the finish the same on all jobs run from different batches of lacquer.

It has been my experience that the safest way to reduce lacquer and hold the gravity the same in all batches, is to use a Baume scale and hold all the batches of one kind of material to the same reading. For instance, on this job I held the primer to a reading of 20, the flat white to a reading of 30, and the white enamel to a reading of 45, giving each job one

No Orange Peel In BERRYLOID



IT'S THE smooth-flowing qualities of Berryloid take the eye and win the favor of experienced painters. They know that a lacquer which sprays on so evenly requires a minimum of rubbing effort.

But more than this, Berryloid is *the* high-luster lacquer. The glossy sheen catches the eye of the prospective purchaser and influences sales. That's one reason the Berryloid sales chart shows steady increase.

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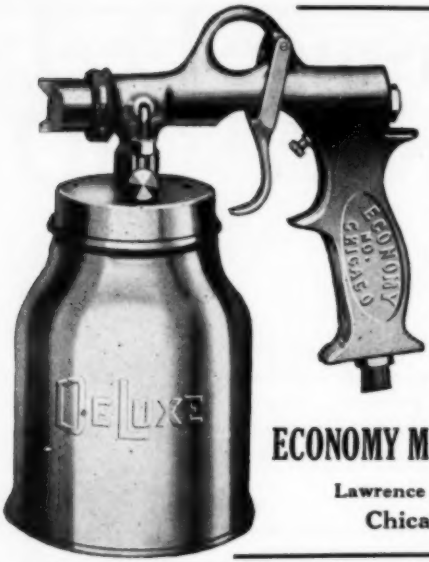

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coat of primer, one coat of flat white which I sanded slightly, following with another coat of flat white misted on; then a double header of the enamel. This made a job that was satisfactory to all concerned.—John Shearer.

Special Varnishes; Enamels

With varnishes it is possible to blend several types to produce a varnish exactly suited to a particular need, but with paints or enamels it has been found necessary, in making high-quality goods, to build the desired properties into the product as it is being manufactured. For this reason, orders for special colors or other special features in paint products call for production after the order has been received, and therefore require more time for delivery than clear varnish goods. —W. H. Martindale.

New Lacquer Improved

It seems to-day there is a popular misconception that the terms "lacquer" and "nitrocellulose" are synonymous. I wish to emphasize the point that the term "lacquer" refers to the drying performance of a finish material, and not to its composition. It is a proven fact that the ultra-violet rays of sunlight quickly decompose clear nitrocellulose lacquer films on the outside.

Many colored lacquers have a natural tendency to chalk or discharge pigment when subjected to prolonged outside exposure. Undoubtedly most of us have seen some evidence of this on automobiles.

To-day there is at least one

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company that has what is termed a flexible lacquer and, like varnish this lacquer has a plastic resistance to the expansion and contraction of wood. It is absolutely waterproof and, instead of chalking and checking through age and exposure, the finish increases in clarity as it ages.

It is also possible to get a suitable primer to use with same, to secure freedom from peeling of lacquer films which some finishers complain about. I have seen lacquered wood panels that have been exposed at Cape Cod and Miami which, after several years test, have failed to break down. —Philip Myers.

Polish for Lacquer Surfaces

Care should be exercised in the selection of a polish for removing the slight film of powder which forms on a lacquer surface that is subjected to severe exposure. Many polishes contain excessive grit and abrasives which scratch the finish. Others contain acids and strong chemicals which quickly wear away the surface, and their repeated application may spoil the finish. Still other polishes leave a greasy film on the surface to collect dirt and dust.

A good polish should contain no harmful ingredients, should have just enough fine abrasive to remove the scum of dirt and powder from the film, and should wipe off clean and dry without any greasy after effect.—Chas. Blanford.

L. A. Ault Retires

Ault & Wiborg Co., Cincinnati, Ohio announces that Mr. L. A. Ault has retired as president after 50 years of business activity. The company otherwise continues with the same personnel and management, as a division of The International Printing Ink Corp., of Ohio.

J. B. Hawley, president, declares that with larger facilities, the company's aim will be to meet the increasing demands of customers and the trade.

Zapon and Duratex Joined

Richards & Co., Inc., of Stamford, Conn., owners of the Zapon Co., announces that it has acquired, as of June 1, 1928, The Duratex Corp., of Newark, N. J.

Manufacturing operations of The Duratex Corp., which has specialized for many years in the production of pyroxylin double-coated and rubber-coated roofing materials for the automobile trade, will be continued under the same management and personnel. The same high-grade standards of quality merchandise and business integrity, which have won an enviable reputation for The Duratex Corp., will be maintained. All orders and contracts on file will receive the usual efficient care and attention.

Richards & Co., Inc., established in 1884, is the original manufacturer of pyroxylin leather cloth. This concern has no connection, directly or indirectly, financial or otherwise, with any other manufacturer of leather cloth.

The Foy Paint Co.—New Plant

The Foy Paint Co., of Cincinnati, Ohio has just announced the purchase of a new factory comprising more than 60,000-sq.ft. of floor space, together with vacant property measuring 90x345-ft. at Norwood, Ohio. Plans call for the immediate construction of a modern stackless varnish plant on the property and purchase of a great deal of the newest and best equipment known to the paint and varnish industry.

With the completion of these plans, the new Foy Paint Co., in Norwood, will rank as one of the largest and best equipped factories of its kind in the Middle West.

Officers of the Foy Paint Co., are:
Wm. F. Foy.....President
E. A. Foy, Jr.,.....1st Vice President
E. A. Foy.....2nd Vice President
Geo. W. Schneider, Jr..Sec'y & Treas.
These officers together with Geo. C. Voll, Sales Manager constitute the company's Board of Directors.

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This Section is devoted to the application, baking and polishing of finishes to be dried in ovens.

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Crystal and Crackle Finishes

Explaining how these finishes are produced and how to control the degree of wrinkling and alligatoring, so as to obtain either fine or coarse effects

By Donald Davidson

CRYSTAL and crackle finishes are examples of defects converted into merits, for crystal finish is a beautiful case of wrinkling, and crackle, of alligatoring.

Crystal finish has been used for the past ten years or more, and crackle for a shorter period, for small metal objects, such as scientific instruments, electric heaters, radios, etc. As they are both somewhat rough, any small roughness of the surface to which they are applied is camouflaged, thus rendering it unnecessary to provide a smooth surface to be painted.

Crystal Finish

When an oil film dries on the surface while the portion underneath is still liquid, the dried film always wrinkles and the thinner the film the smaller the wrinkles. This wrinkling must be due to an increase of volume of the oil as it solidifies, as no other explanation is apparent. In cases where wrinkling does not occur, due to the solidification of the film all the way to the underlying surface, the expansion doubtless results in an increase of thickness of the film, instead of wrinkling.

This wrinkling is much more pronounced with tung oil than any other, and the crystallizing enamel or varnish is produced by adding raw tung oil to an ordinary rosin-tung oil varnish or enamel.

For use the enamel is applied by any suitable means and immediately baked in a well ventilated gas fired oven at a temperature of 110 to 115 deg. F. In a few minutes the entire surface will be covered with minute wrinkles arranged in crystal-like patterns. At this stage the film is rather soft and it must now be baked at about 300 deg. F. for three hours.

Colors which are injured at this temperature must be baked at a lower temperature for a longer time. As the film contains a large amount of oil it becomes very hard and tough on baking.

Crackle Finish

This finish is made with a nitrocellulose enamel; in fact two enamels must be used, the first coat

being an ordinary nitro enamel, while the second coat is a special enamel which cracks, soon after application, in all directions, the cracks widening and exposing the undercoat. As either coat may be of any color, a great variety of effects may be produced.

The second, or crackle coat is a nitrocellulose enamel in which aluminum stearate is incorporated.

A few minutes after the crackle enamel is applied to the dry coat of ordinary nitrocellulose enamel, the "crackle" appears. The effect produced depends a great deal on the skill of the painter. A thick coat of either the undercoat or top produces large figures, while the smallest figures are obtained by both coats being thin. The cracks tend to follow the course of the brush, and a better appearance is given by lightly stippling with a soft brush or a wad of cotton.

Large surfaces cannot be done well with the brush; the spray gun should be used. For a spray enamel a cheaper solvent can be used in place of butyl propionate, such as secondary butyl acetate, but isopropyl acetate is too volatile.

As the stearate renders the film somewhat soft it should be protected by a coat of clear lacquer.

The explanation of the crackle is as follows: The second coat contracts as the solvents evaporate, and as it has a small tensile strength while wet, it cracks, the portions between the cracks continuing to contract, the cracks are thus widened, exposing the undercoat. The upper surface of the undercoat, being softened by the solvent from the upper coat, flows or "gives" and follows the contraction of the upper coat, thus allowing the upper coat to crack. —Paint, Oil & Chemical Review.

Clean Ovens; Clean Finishing

To keep down dust in the oven, clean it out thoroughly at least once a week. Wipe the walls, corners, rods, and all edges with a "tack rag" made by saturating a cheesecloth with a long-oil, coach varnish and wringing out the excess. Allow the varnish to dry a short time until it becomes tacky or sticky; it will then pick up all dust and lint with ease.

When not in use, the tack rag should be rolled into a wet cloth to prevent it from hardening entirely. A tack rag of this kind is of value also in wiping off the articles immediately before they are coated, in order to insure all lint and dust being removed.

Behind the heating units in an electric oven, and between the false ceiling and the true ceiling of the oven, or in any other part that is not easily accessible to a tack rag, use a vacuum cleaner to draw out the dust and dirt.

Over-baked enamel, that has dropped on the oven floor should be removed periodically, to prevent it from getting onto the work. The stacks should be cleaned at least once a month, if there is any accumulation of soot. It is well also to suspend a flat pan a few inches below the opening of the flue into the oven, to catch any deposits of soot or dust that might be blown into the oven from the flue.

The cleaning of the oven should be done on Saturday morning if possible. After the oven has been thoroughly cleaned, run one heat

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HILO **Lacquer-Clear, All Colors, White & Black Japans — Black and Rubber Finishes** HILO

with an empty oven, so that all remaining particles of dust can find a safe lodging place where they will not be likely to fall on the work.

Never paint the inside of an oven nor spray it with linseed oil. In time, these coatings will bake out hard, become brittle, chip off, and fall onto the work. When cleaning a new oven, run the heat up to about 200-deg. F. and spray the entire surface with water while it is hot. The steam and water will loosen all the dirt and carry it to the bottom of the oven where it can be picked up with a vacuum cleaner, or carefully swept out.

When hanging work on the rods in an oven, let the weight of the article gradually come to rest on the rod so as to prevent any jarring which might disturb dust and cause it to settle on the work.

It often happens that an oven door drags on the floor or sticks in some other way. This makes it necessary to slam it in order to get it shut. The resultant jar causes dust to begin flying and this is likely to eventually settle on the work. By swinging the door rapidly a draft is created that draws dirt into the oven and onto the work. Always close the doors slowly and gently.

When through baking a charge, shut off the heat and let the temperature fall somewhat before opening the door. This allows the surface of the japan to become hard so that dust will not stick to it so easily. If the oven doors are opened too quickly inrush of cooler air is likely to draw in dirt that will settle on the sticky work and remain there when cold.—C. C. Durring.

Brushing; Dipping; Flowing

The oldest method of applying paint and varnish is with a hair brush, and it is probable that the brush will continue to be used to a certain limited extent—even in some kinds of industrial finishing.

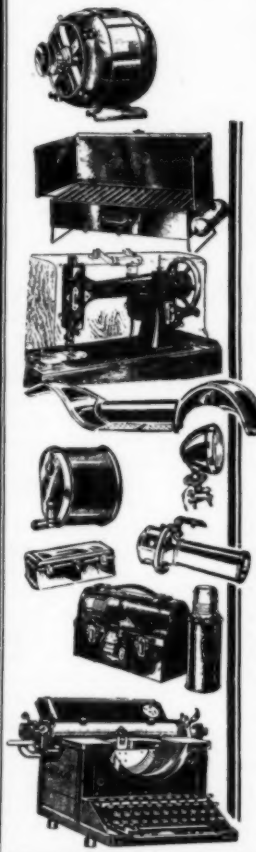
In many agricultural implement factories where the product is painted in "knock-down," the parts are dipped. Dipping tanks have greatly reduced the cost of finishing labor and there is no more waste in dipping than by brushing, as has been proved by actual tests. Another advantage is that every part of the surface is covered with the finishing material, consequently there are no "skips." As a rule everything is primed by dipping and in some factories the second coat and even the varnish coat are applied in the same way.

One form of application, in vogue in some automobile plants that still use paint and varnish materials, is termed "flowing." The final coat of high-grade, finishing, color varnish or clear varnish is put on with a small hose or broad nozzle, the material being applied at the top and allowed to run down over the body and drip into a receiving pan from which it drains by gravity through a filter and runs into a tank beneath the floor. The material is then pumped into a reservoir above and is ready to use again. —E. Perry

Joins Berry Bros., as Demonstrator

Mr. F. R. Ewer, formerly in charge of finishing at the Travel Air Co. and the Stinson Aircraft Corp., and recently head painter of the Cessna Aircraft Co., in Wichita, has accepted a position in the Aircraft Division of Berry Bros. Inc., Detroit, Mich., as practical demonstrator of aircraft finishing.

LILLY'S



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Lilly's Baking Finishes enjoy the same splendid reputation that characterize all Lilly products . . . . they are known throughout the continent for their quality and reliability . . . . they always live up to what is claimed for them.

Lilly's Baking Enamels are particularly suited for use on motors, stoves, sewing machines, fenders, auto accessories, metal boxes, typewriters, telephones, etc. In fact, they are unsurpassed for use wherever a baked finish is desired either black or colors—ask for sample.

LILLY VARNISH COMPANY
INDIANAPOLIS, IND.

Chicago, 273 North California Ave.

Made by Industrial Finishing Specialists

Much Unnecessary Wastage --- How to Find it; How to Stop it-II

Senior Member of The National Accounting Systems explains how to find numerous sources of wastage in industrial finishing departments, points out what causes and conditions are responsible, and details practical plans and methods for permanently eliminating them

By J. J. Berliner, B.C.S.

ON THE EXPENSE analysis, repair materials should be listed in a separate figure from the supplies, to avoid obscuring the regular standard rate of supply consumption, by the use of a separate classification. The purpose of this separation would be to segregate the abnormal expenses for repairs which cannot be gauged so closely, and which cannot be visualized immediately when merged with routine supplies. These routine supplies can be closely standardized, as they are more subject to the control of the department heads and the management.

Machine numbers could be shown on all repair materials, such as small bills, which are used on machines. New equipment, and other tools used in connection with machines, should be charged to plant equipment instead of to expense; only replacements should be charged to expense.

Ten Percent Loss

The difference between the actual amount of paint used during a year in a factory and the amount that the year's output required on the basis of test runs, was 1,000 gallons in one department on an annual consumption of 10,000 gallons of ten percent. The preventable losses amount to such a difference. Containers with their tops off permitted the rapid evaporation of the more volatile ingredients, and allowed dirt to drop in. Open cans of paint were frequently found with the contents aging from exposure.

What Improvements Were Made

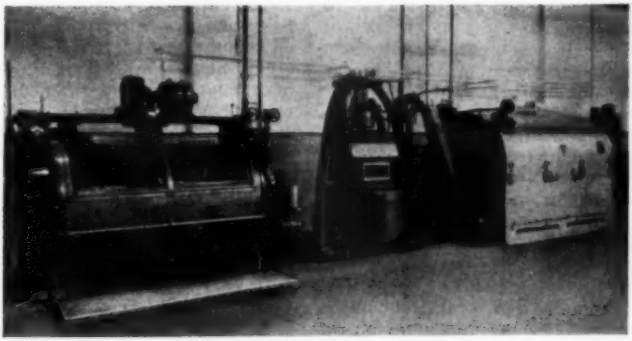
Working methods were standardized in this factory by enforcing cleanliness in the use of finishing materials and by requiring that the covers always be kept on the cans, that large containers be installed in the department and that all paint containers be thoroughly cleaned at regular intervals.

Besides saving material, this plan improved the work by reducing the presence of pimples or flakes of dirt on the painted surface, which in turn saved labor in succeeding operations. Final control was established by setting the standard quantities required for different kinds of work, carefully allowing the right amount of material for a given amount of work, which kept a continual check on the rate of speed that the workman was attaining.

Setting Accurate Standards

The method of setting standards for the amount of materials that is proper to use should not

This cost-cutting equipment makes *new* rags out of *used* rags



The American Unit for reclaiming used wiping rags. Be sure to get the facts and figures.

DON'T discard those wiping rags when you've used them only once! Wash them! Dry them! Use them again and again!

Install this specialized American Unit in your plant. You'll need only a small fraction of the wipers you have to buy now. You can say goodbye to the wasteful practice of using wiping rags once and throwing them away.

Get all the facts—find out what this modern equipment can do in your plant. Just write us—our specialist will call.

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Specialty Department U
Norwood Station, Cincinnati, Ohio

THE CANADIAN LAUNDRY MACHINERY CO., LTD.
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be based on actual consumption over a year's period, but on tested requirements. Some large savings are made by establishing the quantities of materials it is proper for a department to use, and by arranging systems of managing the disbursements of materials so that the employes in that department are held to the efficient use of materials. The foreman should be held responsible for making a given amount of product from a known amount of material used, and any fluctuations from these standards should be eliminated by close investigations.

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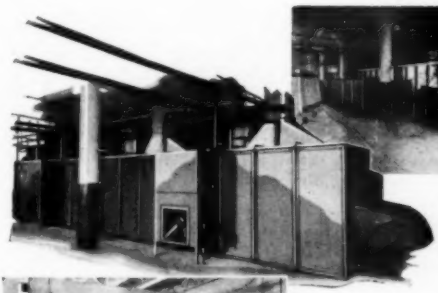

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Ask for an estimate

The R. C. MAHON Company, Detroit, Michigan

MAHON

INDUSTRIAL DRYING OVENS

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Royal Varnish & Color Co.

Official announcement has just been made of the election of Carl M. Owen as President of the Royal Varnish & Color Co., Toledo, Ohio, to succeed L. H. Mory who recently resigned. Roy T. Riggs was made Director and General Manager at the same election.

Several new products are to be manufactured and a program of conservative expansion is to be inaugurated immediately.

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Industrial Finishing

This journal is designed especially to suit your particular needs and we want to know what information you desire, what problems or difficulties you have and how we can assist you in your work. It costs you nothing to make inquiries or to tell us what subjects you wish to see discussed in our reading pages.

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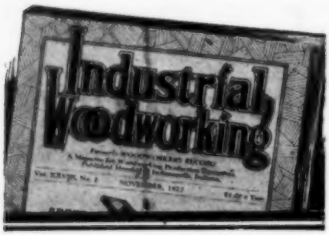

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801 Wulsin Building
Indianapolis, Indiana

Painting Hot Surfaces

Hot surfaces in refineries and elsewhere should be painted whenever possible to protect the metal from rusting, to cut down losses by radiation and to improve the appearance of the equipment. The successful painting of such surfaces calls for the use of special paints. These paints should be applied while the surface is cold and allowed to dry thoroughly before the surface is heated again. Failure to observe this precaution is likely to result in blisters or bubbles which later will flake off and leave bare spots.

Light colored paints of the ordinary type cannot be used for this purpose, since practically all white and colored pigments are darkened upon exposure to temperatures in excess of about 200 deg. F. Darker colored paints, made over a formula containing a liberal proportion of linseed oil and Menhaden oil, can be used where the temperature does not exceed about 400-deg. F.

Above this temperature there are two classes of paint that can be used. The first consists of a black asphaltum type paint which may or may not contain a special heat-resisting black pigment. The other is made by mixing aluminum bronze powder with a special heat-resisting bronzing liquid. Either of these paints will resist temperatures up to about 900-deg. F.

The aluminum type of paint is preferable in most cases to the black paint, because the aluminum paint retards the heat radiation of a furnace or steam pipe in much the same manner as it affords heat protection for storage tanks which are exposed to the sun, due

to its lower rate of absorption of heat waves.

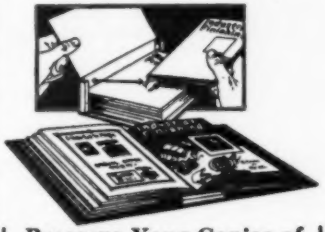
Furnaces, and other heating equipment will maintain the same temperature with less fuel consumption, or a hotter temperature with the same fuel consumption, when they are painted on the outside with specially prepared aluminum paint. This not only results in an economy of fuel but it also makes boiler rooms more comfortable.

While these hot-surface paints lose much of their water-resisting and weather-proof qualities after being heated to high temperatures, there is a close bond of the paint to the steel surface, especially if the surface was thoroughly clean and slightly rough at the time of painting. These paints are also resistant to hydrogen sulphide and other sulphur-laden gases.—F. C. Overhauser.

Custom Automobile Finishing

THE FIRST aim in operating a shop doing automobile finishing is to secure sufficient work to keep busy—profitably. Effective continuous advertising is essential to attract customers to the shop. Soliciting by competent salesmen is another medium for securing work, but satisfactory work at moderate prices—provided the average automobile owner is catered to—will do a great deal toward keeping the shop running most of the time.

Every shop owner should endeavor to build up and hold a good reputation for quality work and moderate prices. A good reputation is the foundation of every thriving business establishment.



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Advertisements under this heading 45 cents a line, minimum charge $1.35. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

SALESMAN WANTED

Lacquer and finishing material salesmen by nationally known manufacturing company for good industrial territories. Attractive commissions on immediate business. Give territory you would like to handle. Give full particulars in first letter. Address IF-207, care INDUSTRIAL FINISHING.

HIGH CALIBRE MEN WANTED

Large finishing materials manufacturer is now reorganizing his sales force and can place several high calibre men in good industrial territories. Liberal commissions paid on established business. Give all particulars in first letter and what territory you can successfully handle. Address IF-209, care INDUSTRIAL FINISHING.

SALESMAN WANTED

A large, old established and progressive eastern company manufacturing full line of varnishes, enamels and lacquers requires salesman for Chicago, Illinois, and Indiana territory. Only a man with sales ability and able to demonstrate will be considered. State experience and salary expected. Write fully in first letter, giving detailed information, which will be held strictly confidential. Address IF-213, care INDUSTRIAL FINISHING.

WANTED

Industrial lacquer and finishing material salesman for good industrial territories. State territory you would like to cover with full particulars in first letter. Address IF-212, care INDUSTRIAL FINISHING.

NEW YORK STATE TERRITORY SALESMAN

Is interested in handling, on straight commission, full line of lacquers, baking and air drying enamels, japans and varnishes—industrial accounts only. Has had number of years experience in practical end and is well acquainted with accounts in territory. Present connection unable to handle all items. Address IF-211, care INDUSTRIAL FINISHING.

FOREMAN FINISHER

Desires position. Uptodate in latest methods of finishing. Fifteen years' experience in bed room and dining room furniture and case goods. Also can get production. Have good references. Address IF-214, care INDUSTRIAL FINISHING.

WANTED

Used Nash No. 6 sander. BOX 293, Piggott, Ark.

FOREMAN AND MECHANIC

Wanted to operate a double cane chair factory. Man of experience has work for years. Address BOX 293, Piggott, Ark.

There is so much which is good that it would be unfortunate to miss it; so much which is not good that it would be detrimental to accept it.

Many small corporations, all of them with a small capitalization, have been able to so arrange their business during the last two or three years that they can go along without piling up any large inventory and with their finished product rolling out of the factory, on a firm order, just as soon as completed.

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CHICAGO

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Without obligating me in any way, send me full information on the HB Paint Spray Outfits illustrated, including details of the HB 30 Day Trial plan — new low price and easy monthly terms.

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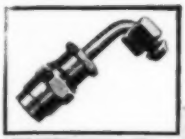

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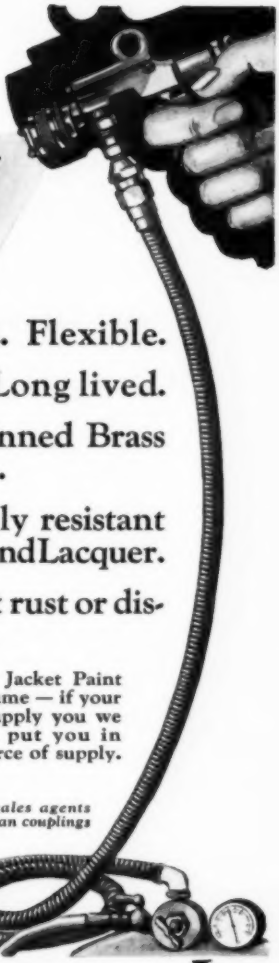

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3. Tinned Brass Tube.
4. Highly resistant to Duco and Lacquer.
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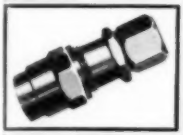
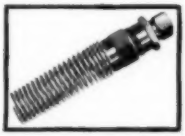


Ask for Yellow Jacket Paint Spray Hose by name — if your jobber cannot supply you we will be glad to put you in touch with a source of supply.



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And it does. The world is beauty conscious. It is looking for that merchandise which combines beauty and color with practical usefulness.

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Why not have our Industrial Finishing Engineer conduct a demonstration in your plant on your product? Let him prove the advantages of Wiborite to your complete satisfaction. No obligation on your part. Write for information.

THE AULT & WIBORG COMPANY

Varnish Works
Established 1871

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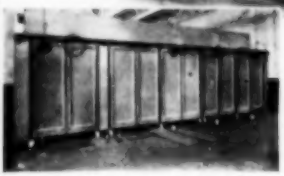

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The Cincinnati Varnish Co., recently purchased by the Foy Paint Co., of Norwood, Ohio, has been engaged in the manufacture of paints, varnishes, enamels and lacquers for the industrial trade since 1865. The manufacture of its products and those of The Foy Paint Co., will be handled in the new plant in Norwood, Ohio, and the former owners of the Cincinnati Varnish Co., will be identified with The Foy Paint Co., in its sales department.

Royal Varnish & Color Co.

Official announcement has just been made of the election of Carl M. Owen as President of the Royal Varnish & Color Co., Toledo, Ohio, to succeed L. H. Mory who recently resigned. Roy T. Riggs was made Director and General Manager at the same election.

Several new products are to be manufactured and a program of conservative expansion is to be inaugurated immediately.

To Readers Of

Industrial Finishing

This journal is designed especially to suit your particular needs and we want to know what information you desire, what problems or difficulties you have and how we can assist you in your work. It costs you nothing to make inquiries or to tell us what subjects you wish to see discussed in our reading pages.

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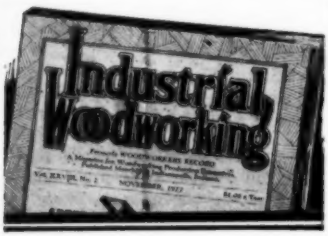

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Painting Hot Surfaces

Hot surfaces in refineries and elsewhere should be painted whenever possible to protect the metal from rusting, to cut down losses by radiation and to improve the appearance of the equipment. The successful painting of such surfaces calls for the use of special paints. These paints should be applied while the surface is cold and allowed to dry thoroughly before the surface is heated again. Failure to observe this precaution is likely to result in blisters or bubbles which later will flake off and leave bare spots.

Light colored paints of the ordinary type cannot be used for this purpose, since practically all white and colored pigments are darkened upon exposure to temperatures in excess of about 200 deg. F. Darker colored paints, made over a formula containing a liberal proportion of linseed oil and Menhaden oil, can be used where the temperature does not exceed about 400-deg. F.

Above this temperature there are two classes of paint that can be used. The first consists of a black asphaltum type paint which may or may not contain a special heat-resisting black pigment. The other is made by mixing aluminum bronze powder with a special heat-resisting bronzing liquid. Either of these paints will resist temperatures up to about 900-deg. F.

The aluminum type of paint is preferable in most cases to the black paint, because the aluminum paint retards the heat radiation of a furnace or steam pipe in much the same manner as it affords heat protection for storage tanks which are exposed to the sun, due

to its lower rate of absorption of heat waves.

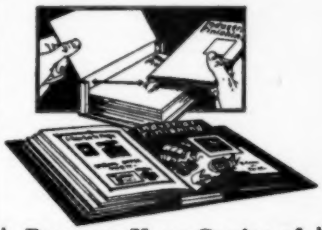
Furnaces, and other heating equipment will maintain the same temperature with less fuel consumption, or a hotter temperature with the same fuel consumption, when they are painted on the outside with specially prepared aluminum paint. This not only results in an economy of fuel but it also makes boiler rooms more comfortable.

While these hot-surface paints lose much of their water-resisting and weather-proof qualities after being heated to high temperatures, there is a close bond of the paint to the steel surface, especially if the surface was thoroughly clean and slightly rough at the time of painting. These paints are also resistant to hydrogen sulphide and other sulphur-laden gases.—F. C. Overhauser.

Custom Automobile Finishing

THE FIRST aim in operating a shop doing automobile finishing is to secure sufficient work to keep busy—profitably. Effective continuous advertising is essential to attract customers to the shop. Soliciting by competent salesmen is another medium for securing work, but satisfactory work at moderate prices—provided the average automobile owner is catered to—will do a great deal toward keeping the shop running most of the time.

Every shop owner should endeavor to build up and hold a good reputation for quality work and moderate prices. A good reputation is the foundation of every thriving business establishment.



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SALESMAN WANTED

Lacquer and finishing material salesmen by nationally known manufacturing company for good industrial territories. Attractive commissions on immediate business. Give territory you would like to handle. Give full particulars in first letter. Address IF-207, care INDUSTRIAL FINISHING.

HIGH CALIBRE MEN WANTED

Large finishing materials manufacturer is now reorganizing his sales force and can place several high calibre men in good industrial territories. Liberal commissions paid on established business. Give all particulars in first letter and what territory you can successfully handle. Address IF-209, care INDUSTRIAL FINISHING.

SALESMAN WANTED

A large, old established and progressive eastern company manufacturing full line of varnishes, enamels and lacquers requires salesman for Chicago, Illinois, and Indiana territory. Only a man with sales ability and able to demonstrate will be considered. State experience and salary expected. Write fully in first letter, giving detailed information, which will be held strictly confidential. Address IF-213, care INDUSTRIAL FINISHING.

WANTED

Industrial lacquer and finishing material salesman for good industrial territories. State territory you would like to cover with full particulars in first letter. Address IF-212, care INDUSTRIAL FINISHING.

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Is interested in handling, on straight commission, full line of lacquers, baking and air drying enamels, japans and varnishes—industrial accounts only. Has had number of years experience in practical end and is well acquainted with accounts in territory. Present connection unable to handle all items. Address IF-211, care INDUSTRIAL FINISHING.

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Desires position. Uptodate in latest methods of finishing. Fifteen years' experience in bed room and dining room furniture and case goods. Also can get production. Have good references. Address IF-214, care INDUSTRIAL FINISHING.

WANTED

Used Nash No. 6 sander. BOX 293, Piggott, Ark.

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Wanted to operate a double cane chair factory. Man of experience has work for years. Address BOX 293, Piggott, Ark.

There is so much which is good that it would be unfortunate to miss it; so much which is not good that it would be detrimental to accept it.

Many small corporations, all of them with a small capitalization, have been able to so arrange their business during the last two or three years that they can go along without piling up any large inventory and with their finished product rolling out of the factory, on a firm order, just as soon as completed.

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